

81
In This Issue—*The N. A. D. A. Meeting*

MOTOR AGE

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Number 6

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Thirty-five Cents a Copy
Three Dollars a Year

86

WHAT JORDAN SEES AND HEARS

IT IS a well known fact in the trade that Mr. Jordan, president of this company, travels more than any other executive in the automobile industry, and comes in contact with more people who are in a position to furnish accurate and important information regarding the progress of the industry and the problems which dealers and manufacturers are constantly meeting.

Mr. Jordan receives many letters from dealers in all sections of the country, asking questions regarding various problems and seeking information which may be of help to them in their business.

In order to conserve his own time, which has been given to the dictation of separate letters, and to be of real help to dealers, this survey of the industry will be sent from time to time to those who may express an interest.

Those who may express an interest in the mailing



If you'd like to be on the mailing list send me your name.

W. B. Riley
Sales Manager
Jordan Motor Car Co.
Cleveland, O.

BLACK & DECKER

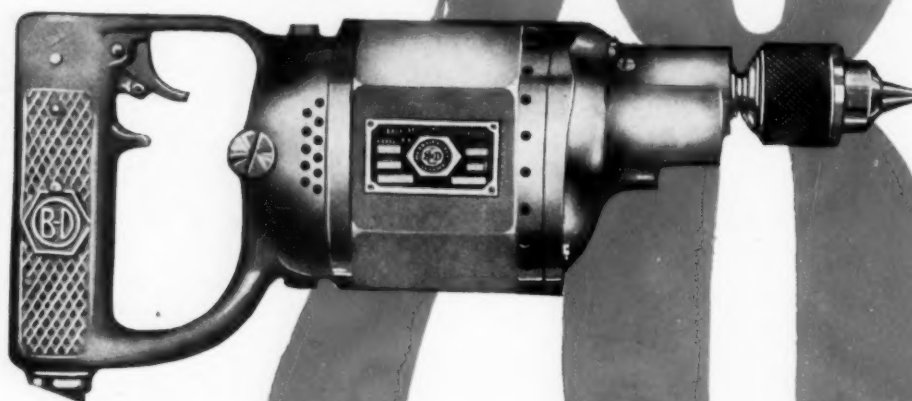
$\frac{1}{4}$ inch PORTABLE ELECTRIC DRILL

"With the Pistol Grip and Trigger Switch"

Price reduced to

\$28.⁰⁰

was \$39.⁰⁰



Owing to the large demand for the Black & Decker Quarter-Inch Portable Electric Drill our production on this unit this year has been practically trebled. This has enabled us to reduce our manufacturing costs, and in accordance with our established policy we are passing the saving on to you.

This is the standard Black & Decker Quarter-Inch Drill, exactly the same as has previously been sold for \$39.00 except that it has been improved by the addition of a geared-nut chuck instead of a hand operated chuck.

A new folder describing this unit in detail, INCLUDING SPECIFICATIONS, is yours for the asking



Guaranteed by

THE BLACK & DECKER MFG. CO.
Towson Heights, Baltimore, Md., U.S.A.

BRANCH OFFICES AND SERVICE STATIONS CARRYING COMPLETE STOCKS
OF PARTS AND OPERATED BY FACTORY TRAINED MEN LOCATED IN

BOSTON
NEW YORK
ATLANTA

SAN FRANCISCO
PHILADELPHIA
KANSAS CITY

DETROIT
CHICAGO
CLEVELAND

Canadian Factory, 344 St. James St., Montreal, P. Q.

**"The Well-Equipped Shop
Gets the Business"**



Feltbak

*"The Sweetest Acting
Ford Brakes You Ever
Put Your Foot On"*

Designed to Operate Perfectly in the Ford Transmission

BEFORE Feltbak was designed, no lining had been perfected to meet the actual working conditions of the Ford Transmission. Feltbak is a lining of mechanically perfect design. It overcomes the troubles of a Ford transmission by meeting the conditions as they exist.

You readily recognize the faults of the ordinary lining. It grabs and slips. Requires unnecessary pressure to stop the car. Chatters and vibrates causing discomfort and expensive repairs.

Feltbak meets the actual conditions in the Ford transmission. Feltbak overcomes the trouble so familiar to the Ford owner. Feltbak does this because it is designed properly. It is the result of engineering experience that has solved the problems of the Ford Transmission Lining.

Feltbak Makes the Ford Owner Satisfied with Fords

The feltbacking cushions the braking action and acts as a reservoir for the oil. The greater the pressure, the greater the flow of oil. Feltbak softens braking action, makes Fords easiest, most responsive, car to handle.

Feltbak lasts so long that it is far the cheapest—and it actually prolongs the life of your Ford car.

Ask your dealer for Feltbak. He has it or can get it immediately from any wholesale house. Our 1923 catalog will be sent free to any established dealer who writes us on his letterhead.

Advance Automobile Accessories Corporation
1721 Prairie Avenue, Dept. 957 : Chicago, Illinois

Advance equipment is recognized from coast to coast as the finest made. When you buy an article of our manufacture for your automobile, you are sure that it is the best article for the purpose which money and manufacturing skill can produce



Feltbak — a New Idea

Lubricates Itself—Softens Brake Action

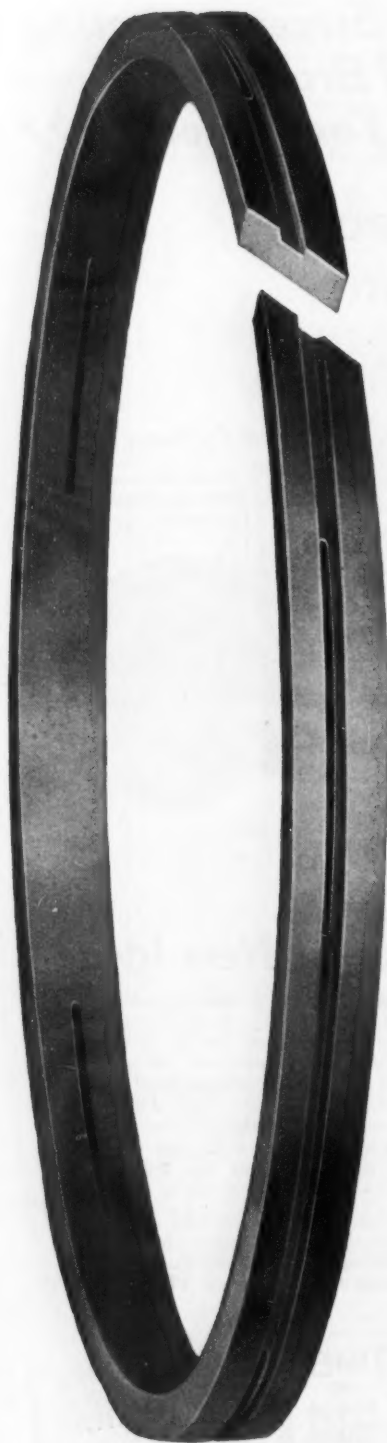
THE feltbacking absorbs and holds oil like a wick. When pressure is applied, oil spouts through the oil holes on to the surface of the lining. More pressure forces out more oil. Thus the braking surface gets oil during braking action—right when needed to prevent burning or glazing. Hard, glazed brake lining is what causes the chattering vibration in Fords.

Feltbak is an improvement over the cork-in-fabric brake lining. Add to this the felt cushion backing and the automatic lubrication to prevent burning and you have the correct brake lining for Fords—FELTBAK.

<p>WHITE STRIPE FAN BELT FOR FORDS and LARGER CARS</p> <p>Outwears Six Ordinary Belts on Ford Cars Never needs adjustment. For larger cars, too.</p>	<p>ADVANCE ASBESTOS BRAKE LINING for LARGER CARS</p> <p>Made from genuine asbestos for use on larger cars. Buy it for Better Brakes and Longer Wear.</p>	<p>DUPLEX SHOCK ABSORBERS FOR FORDS</p> <p>The Shock Absorber for Rough Roads. Eliminates bounce, side-sway, vibration. You wouldn't believe a Ford could ride so easy.</p>	<p>RED STAR TIMER FOR FORDS TRUCKS and TRACTORS</p> <p>The scientifically correct timer for Fords; Roller of 100 pt. carbon tool steel; torsion spring type rotor assembly.</p>	<p>WHITE STRIPE TRANSMISSION LINING FOR FORDS</p> <p>— Means Better Ford Brakes Less up-keep expense Woven and treated especially for Fords</p>
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ADVANCE EQUIPMENT

"Every Product the Best of its Kind"



PRICE \$1.00 EACH

Up to and including 5 in. diameter



PISTON RINGS

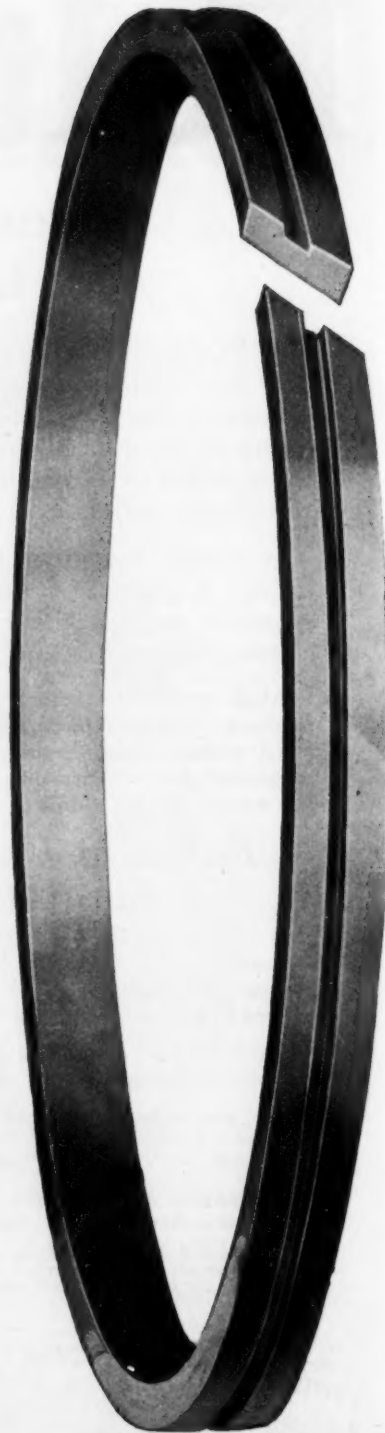
PROOF OF the superiority of **PERFECT CIRCLE Oil-Regulating** Piston Rings can be found on every hand—in the experience of dealers who install them—in the growing demand for them from motorists—in the racing victories of Jimmy Murphy and Tommy Milton—in their adoption as standard equipment in some of the finest motors and motor cars built.

These rings stop oil-pumping and give an oil mileage of 1000 to 1500 miles to the gallon.

They regulate the oil without scraping the cylinder wall, and provide *positive* lubrication, always.

Install a set of **PERFECT CIRCLE Oil-Regulating** Rings—one to a piston—and you'll see their possibilities for increased business and profits. And when you want a "regular job", put in **PERFECT CIRCLE Compression** Rings, too. These rings have an annular groove turned on the face midway between the edges, which serves as an oil reservoir, and helps seal the ring against loss of power and compression.

You will never know what a difference piston rings make until you have tried a complete set of **PERFECT CIRCLE** Piston Rings. Write for a trial set today!



PRICE 25c and up

Marketed through recognized automotive jobbers, only.

Indiana Piston Ring Company

Hagerstown, Indiana

Harkrader & Harkrader: *Western Sales Agents*, 1603 S. Michigan Ave., Chicago

MOTOR AGE

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SUBSCRIPTION RATES	
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Canada	5.00 per year
All Other Countries in Postal Union.....	6.00 per year
Single Copies	35 cents

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Entered as Second Class Matter Sept 19, 1899, at the Post Office at Chicago, Ill., under Act of March 6, 1879.



Reg. U. S. Pat. Off.

MUCKY WEATHER FRIENDS

ARROW GRIP Chains and Jacks are more than "fair weather friends." They are at their best when roads are at their worst.

ARROW GRIP CROSS CHAINS

with QUICK REPLACEMENT FASTENERS



Arrow Grip Replacement Fasteners make cross chain repairs easy. No tools needed. A turn of the button releases broken chain; another turn fastens new one securely. Arrow Grip Cross Chains and Fasteners are sold separately. Economical. Use with any side chain. Carry a few with you.

ARROW GRIP JACKS

HANDLE CONTROLLED

Keep out of the muck and mire. Jack pushes under car with long extension handle. A few turns, while standing upright, raise or lower the car. Stows away in small space. Three sizes fit all cars and trucks.



Just what your customers are looking for. Ask your Jobber or write for Literature.

ARROW GRIP MFG. CO., Inc.

GLENS FALLS, N. Y.

Export Office: 280 Broadway, N. Y.

OLDSMOBILE

"We take this opportunity to compliment you on the quality of the Oldsmobile product, which is everything we could wish for. Also, it gives us pleasure to be able to add conscientiously that the policy of your company today is better than that of any other manufacturer we have ever come into contact with, and all these things mean much to the dealer in his efforts to achieve success."

JOHNSON TIRE & AUTO COMPANY
MONTGOMERY, ALA.

(December 24, 1922)

The above is an unsolicited expression from one of our dealers. The letter, of which it was a part, dealt with routine business—yet the dealer voluntarily took occasion to express himself on the Oldsmobile product and the Oldsmobile contract.

We are constantly publishing signed letters like this one—a standing invitation to ambitious dealers to ask *our* dealers what they think of the Oldsmobile contract.

OLDS MOTOR WORKS, LANSING, MICHIGAN
Division of General Motors Corporation



Oldsmobile

A Product of General Motors

The remarkable combination of high quality and low price that characterizes Oldsmobile, is possible because of Oldsmobile's connection with the General Motors Corporation—and with the tremendous engineering, manufacturing and purchasing facilities which this connection affords.

GENERAL MOTORS BUILDING—DETROIT



The Publisher's Service Station

Rendering Service to Help You Render Service



An Old Favorite Returns

Bill Fixit was at the Chicago Show.

Many of the readers of MOTOR AGE will remember Bill. He was introduced to the MOTOR AGE readers about two years ago by A. H. Packer, then a contributor to this magazine. Bill is an electrical expert and he made many friends by his informal but effective way of spreading information about things electrical. Since then, Packer has joined the MOTOR AGE family and now Bill is to come back to us for a period.

Since his former appearance, Bill has made money, as naturally follows in the business efforts of a man who is honest and intelligent.

Contrary to the advice of some of his friends, Bill put this money into an automobile dealership that was not going any too well, but Bill is a somewhat original man. In fact, he is so original that he has gone back to some of the very old fundamentals for his inspiration and his business guide posts. In this he reminds us of the story that E. S. Jordan of the Jordan Motor Car Company, so often tells:

"Henry L. Leland once said to me: 'Young man, if you try to be clever and foxy in business you will have much competition. If you will be just plain honest, you will be lonesome and be so without competition that you cannot help but succeed.'"

So Bill, too, believes that in coming into this somewhat halting dealer's establishment with his plain honesty, his insistence upon understanding, his plan to use only people who believe in the products they sell, that he can make this establishment succeed.

In this series, Bill will undertake as his special mission in this establishment a complete understanding of the electrical part of the car. He will meet with the personnel of this organization at frequent intervals and will talk electricity to everybody in the shop. He will tell the salesmen what they should know about electricity and its equipment and what they should tell the car buyer. After this message is conveyed, he will go further into the subject and tell the technical men what he believes they should know.

Each of Bill's talks will be of a dual nature, one part for the non-technical man and then he will carry the message into the best form for the technical man.



Think What a Nash Franchise Means

Stop for a moment and figure how much better you might do with a Nash franchise.

There's many a good dealer handicapped by the line he now handles.

It is well worth a little serious study to see how much farther you can go with the backing of a powerful organization like the Nash Motors Company.

Sit back and picture to yourself what you could do with the new line of Nash Fours and Sixes that are now being displayed at the Shows.

Analyze the favorable features of the Nash dealer contract.

Look at the record the company has made already—the fastest growth in the industry during the past six years.

And then sit down and write us how you feel about it.

There are still some territories open but we are picking men of real calibre. If you can qualify, get in touch with the sales department at once.

NASH

THE NASH MOTORS COMPANY
KENOSHA, WISCONSIN

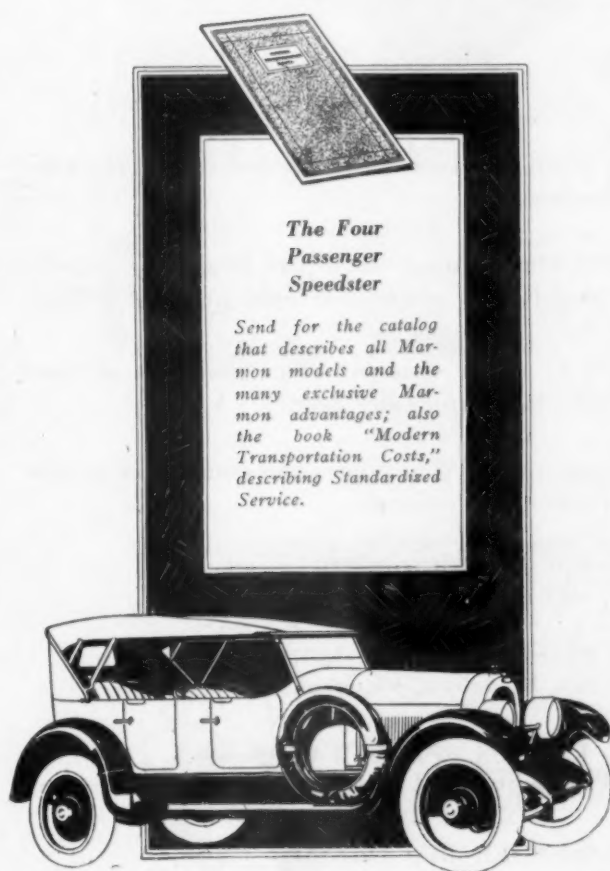
Nash Leads the World in Motor Car Value



If you were a Marmon Dealer—

—you would profit in a big way by Marmon's astonishing maintenance record.

The popular conception of Marmon as the most economical Fine Car would make you the center of automotive interest in your community.



You would have the *Proof*—\$4.71 per month per car for mechanical upkeep — to crystalize this public approval into *Sales*.

Write for the list of Marmon maintenance averages, and also for details of direct-factory contract.

NORDYKE & MARMON COMPANY

Established 1851

INDIANAPOLIS

Address Inquiries to Dept. A

MARMON

The Foremost Fine Car

This is the thirty-first of a series of fifty-two advertisements appearing in this publication



The stability of Reo as an institution is reflected in its relations with its selling organization.

A Reo franchise is never granted until the dealer is wholeheartedly for Reo,—and Reo is wholeheartedly for that dealer!

That's why Reo serves as a true example of permanence of connection between manufacturer and sales agency.

—and is one of the reasons why Reo enjoys the confidence of the buying public in such generous measure.

REO MANUFACTURES IN
ITS OWN BIG SHOPS:

FIVE PASSENGER CAR MODELS
(Coupe, Sedan, Brougham, Phaeton, Touring)

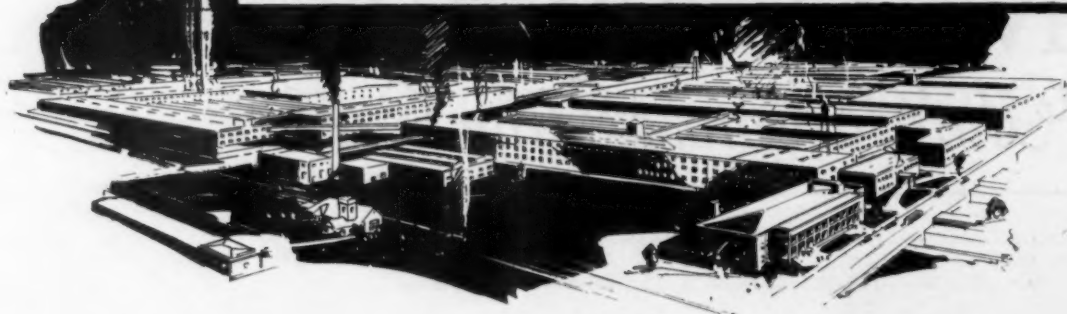
THE FAMOUS SPEED WAGON
(In Twelve Standard Body Styles)

PASSENGER BUS CHASSIS

TAXI CAB

Manufactured Products—Not Assembled

REO MOTOR CAR COMPANY, Lansing, Michigan



MOTOR AGE



"We Want Cars" Is Cry At Chicago Show

Dealers and Public Join in Chorus and Make Exposition Notable for the Selling Feature

By CLYDE JENNINGS

THE Twenty-third Annual Chicago Automobile Show will go into history as a buying show. Both the people and the dealers bought cars. Dealers who thought they were stretching a point when they placed an order for 1923 early in the winter came to Chicago and increased that order.

The salesmen who have been on duty at the show report an especially large number of prospects gathered

there. A number of the Chicago dealers reported heavy sales, actually closed at the show. Strange as it may appear, with a number of these sales were without an old car to be turned in as part payment.

The dealer attendance at the show was very heavy. Some of the company dealer dinners ran into large figures, one such dinner counting more than 500 present. Those who attended several of these dealer din-

ners report that there was more business and less cabaret than in former years. The factory men came to this show with a very definite message for the dealers. Briefly, it was this:

The factory is going into a high production program with a view of reducing prices to a minimum. We are going to give our dealers every advantage possible in the way of low prices, prompt delivery of various models, and we want you to place your full order as soon as possible, so that we may distribute these cars fairly.

At the same time we want you to realize while there is every evidence of a very heavy demand for automobiles this year, there is going to be some very sharp competition and you will have to do something besides offer these automobiles for sale. Every factory is doing its utmost to put its dealers on the go and the dealer who strikes the fastest pace will succeed in disposing of his cars and the dealer who is laggard will be lost.

Factory Attitude Toward Dealers

There was not much in the way of commandatory talk to dealers. In one of the dinner meetings the sales manager let the dealers know that he was ready to replace any of them at any time in order to get a proper representation in any community. This was rather a lonesome note, as the once familiar threats against dealers were more conspicuous for their absence. In the main, the factory men appeared to realize their dependence upon dealers and that their job was to help these dealers in any way they could.

A few years ago one would get the impression from factory representatives that dealers were as plentiful as hailstones near a greenhouse on an April afternoon, and all that was necessary was to look over the ground and pick out the best. Now there seems to be a revised opinion; that the automotive dealer business is a real business and that a man must know a good deal and learn something more to be able to go ahead, sell cars and make money. Also there is an impression among factory folk that the only good dealer is one who makes money. Formerly it was thought that the good dealer was the man who took a lot of cars from the factory and disposed of them. If the man went broke, that was his hard luck, and no concern of the factory.

Recently efforts to get new dealers have brought before the factory people the ghosts of their former dealers in that particular community. Dealers today are just as much afraid of ghosts as any comedy negro. In any community where several men have failed to put over a certain line, there is a feeling against that dealership in that community. Several times during the last week *MOTOR AGE* has been asked by dealers seeking a new line if dealers in a certain line have been making money.

Factory officials in the main are talking of six months rather than a full year.

They believe that the demand for cars for the first half year is strongly in evidence and that the demand for the second half year is indicated. They are sure of the production for six months and hopeful for the full year. If the second six months' hopes are realized, then the industry is set for the biggest year. If these hopes are somewhat dampened, it will be at least a big year.

Next to the show itself and the closely

The National Automobile Chamber of Commerce at the 1923 National Automobile Shows presented the public, three questions:

1. In what way are the national automobile shows of the greatest benefit to the public?

2. In what way are the national automobile shows of the greatest benefit to my company?

3. In what way are the national shows of the greatest benefit to me?

About three hundred answers were received and are now being judged by a committee appointed to select the best. A circular printed by the N. A. C. C. gives the gist of the answers from which we quote the following outstanding points:

The National Shows are the milestones that indicate to the public and manufacturer alike, the progress made and the direction being taken by public preferences and the fundamental trends of the industry.

The salesman's task is made easier at a time of the year when it is most difficult to sell.

The dealer often profits by adopting the hints and suggestions of other dealers to his own needs.

The shows have helped greatly to eliminate frauds and incompetence.

The manufacturer comes in contact with the users and observes their pleasures and criticisms of his product.

The people attending the show later retail what they have noted to friends and acquaintances.

They lead to a leveling of the classes, rich and poor.

Interest in good roads is stimulated.

Leads to the publication of a wonderful array of information by the trade press.

aligned dealer meetings, the most important event of the week was the sixth annual meeting of the National Automobile Dealers' Association. Last year when the N. A. D. A. changed from a \$10 a year come one come all membership to an exclusive, good merchant association with dues ranging from \$50 to \$250 a year, there were a lot of predictions that the National dealer association idea had shot its bolt. How sad the prophecy! This year 450 of the best dealers in the country registered to attend the annual meeting. Many of them sat through the two-day session at the La Salle Hotel. They had come to learn and they stayed there to learn. A large number of these men have been in the automobile mercantile business for a score of years, or almost that. Many of them have amassed large private fortunes and are the heads of big distributing organizations.

Yet they come to this meeting to learn what they can of their business from

men who have made a study of special features of merchandising. They learn from the man who has studied the shoe trade and the grocery trade, or the man who has studied salesmanship. These men have studied their business so closely that they realize that after all it is just business and they have not learned all about business in their long and successful careers.

The fact that the N. A. D. A. has gained 700 members at the increased rate in a year shows that the idea is a good one. The fact that the association has spent much money for surveys and service and in spite of that fact has increased its treasury, shows that the idea has gone over. The fact that its members voted favorably for a national survey of the automobile selling industry shows that these members are anxious to serve their fellow merchants.

Object of the Survey

This survey, according to present plans, will be made by the Harvard Bureau of Business Administration. The object is to establish a standard cost sheet, so that automobile merchants may have some indication as to whether they are really making money or not. This cost sheet will show the average of overhead, labor and other charges. It might possibly show what would be a fair factory discount. It would bring order in a field where at present there is only disorder. It is to be hoped that nothing will happen to stop this movement. It is at present in the hands of the board of directors. In explaining what might be accomplished by such a survey, Richard Lenihan, assistant director of the Harvard Bureau, said: "There is no competition quite so destructive as that which comes from the merchant who is losing money and does not know it."

In reviewing the roster of newly elected officers of the N. A. D. A. and the sane resolutions adopted at the meeting, one cannot help but be impressed with the saneness of membership and management. In looking over the members present, one could not but be impressed by the business ability of these men engaged in seeking to learn about their own business and trying to do something to establish their business on sane lines.

One of the N. A. D. A. resolutions, it will be noted, refers to that long time sore spot between dealers and factory—the advertising program. While the dealers were asking for cooperation on this matter, the factory advertising managers were in session in another hotel with everybody barred. Some announcements were made after these secret sessions as to what had been discussed and these announcements did not say anything about closer cooperation with dealers. Perhaps this was discussed, but such conclusions as were reached were not announced.

It appears more than passing strange that a party of advertisers should meet and discuss the worth of their advertising without having present the men who have the only opportunity to learn

whether or not this advertising is effective. There are two kinds of advertising from an automobile factory; that to influence the dealers and that to influence the public. The dealer is the only man who can measure either kind of this advertising to the full extent.

Next in importance to the National Dealer meeting was the attention accorded to service. The Society of Automotive Engineers and the Automotive Electric Service Association both devoted their sessions exclusively to service. It was unfortunate that the Electric Association permitted their session to overlap the S. A. E. meeting, which is an established function on Wednesday of the Chicago Show week, and has been for a number of years.

The Automotive Electric Service Association is not a new organization, but previously it has worked in a way that appeared to be somewhat mysterious to the great automotive public. Even this year with some sessions open, there were closed sessions which aroused curiosity and there was little given out from these sessions. Not even the explanation as to why they were secret.

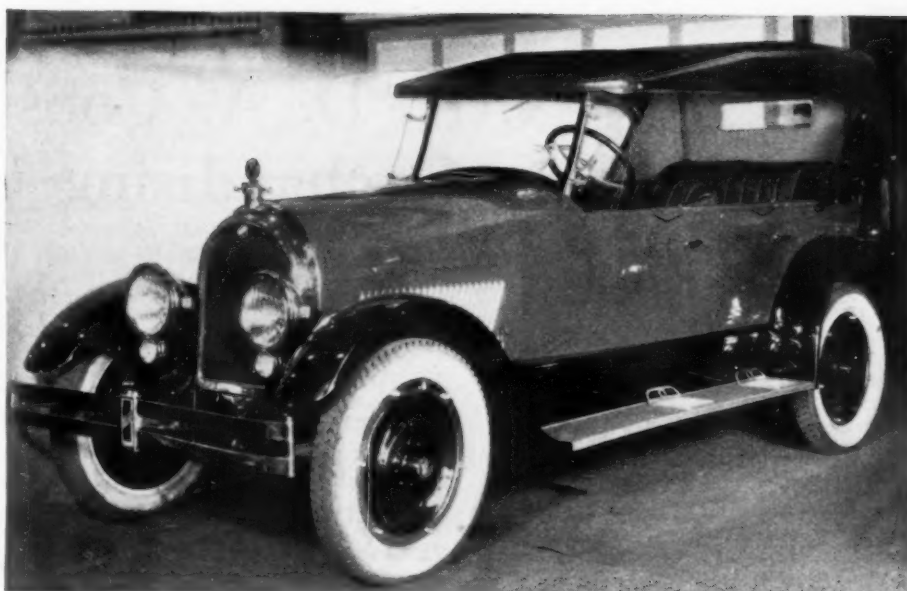
The S. A. E. session closed with the annual Chicago dinner which drew a crowd that filled the Gold Room of the Congress Hotel and at which Edward S. Jordan was the chief speaker. Jordan had a bit of fun with the leading engineers of the industry by quips at their expense. The audience enjoyed some of his announcements, which he said were relayed by him from the barber at the Detroit Athletic Club, the automotive gossip headquarters.

Some of these were that Will Rogers had been selected as production manager for the 36 cars that Durant expects to build; that Flo Ziegfeld has been engaged as the designer of the most beautiful car in America, and that when Ford is elected president he will name his cabinet about as follows: Secretary of State, Maurice Perlmutter; Secretary of War, Abe Potash; Secretary of the Navy, Newberry of Michigan; Secretary of Agriculture, Isadore Duncan, who will be in charge of the Muscle Shoals development.

Jordan Talks on Human Element

After the pleasantries, Jordan spoke of the manufacture and sale of cars with a full consideration of the human element of the people who are to buy them. He said that the end of the story for some makers was told in the used car valuation of their products, as even an automobile manufacturer could not live down the truism of "Those who survive are those who serve best." Service built into the car, Jordan said, will be evident after the newness of that car has been worn off. He offered as a solution for the so-called used car problem the following:

"The used car problem will disappear when our merchants learn that a merchant can be successful only as long as he buys his merchandise at a lower price



One of the new models which was shown at the Chicago show was the Climber, a product hailing from Arkansas. The phaeton shown here and completely equipped, is priced at \$1695. Disc wheels are regular equipment and a dummy wheel is carried at the rear to support a spare rim and tire

than he must sell it."

It was rather notable that the banker who spoke at the N. A. D. A. dinner was quite lonesome in his statement that the new car dealer should not sell second-hand cars. It was also quite notable that while he got applause for this statement, it was only a sprinkled applause, not general. The evidence of the week appears to be that automotive people are all convinced that the used car is in the automotive merchandising establishment to stay and that the problem must be solved only by good merchandising methods and information as to what is the market price of a used car.

An interesting meeting was that of the advertising managers of the Motor and Accessory Manufacturers' Association, which was open to the public and at which representatives of dealers, advertising agencies and others were asked to tell their views of how the "specialized car can be advertised." The specialized car has been known as the assembled car.

It is a fact that the makers of those parts spend about \$10 in advertising for every \$6 that are spent by the complete vehicle manufacturers. These advertisers have been exploiting the excellence of their own particular units. The present effort is to learn how this advertising can best be used to promote the sale of the completed vehicle containing this part. It is a realization that the public is no longer buying a vehicle merely because it has a certain engine, or an axle or a clutch, but rather the public is buying an automobile to get transportation, not because it is an automobile.

Some of the developments of this meeting are of interest to the dealers and will be presented in MOTOR AGE pages at a later date. And the same can be said of some of the papers read at the S. A. E. meeting. It is quite impossible to tell all about these meetings in one issue.

There was a good deal of comment all week about the stand taken by Norval A. Hawkins in a recent public utterance that shows, especially the New York show, were not worth while. The general belief was that the Chicago show was an effective answer to Hawkins. A lot of the dealers were inclined to agree with the Hawkins theory as to cabarets and other forms of wild entertainment not being necessary for the dealers.

Indeed, it seems that a good many dealers have had for years some of their own ideas about these meetings, but they have not been consulted when the factory arranged the program, but that they would much prefer a businesslike dinner and that they would look elsewhere for their entertainment.

What About National Shows?

In some quarters there was some speculation as to why Hawkins had taken the stand he did, if he was merely to get discussion for the shows or possibly for himself. At least this argument created a very sharp interest in the contest that was held at the two national shows this year asking the people what they thought of shows. A reprint of many of the answers turned in at the New York show was distributed in Chicago and eagerly read.

Sam Miles, manager of this show and of all other annual shows held in Chicago, received the usual congratulations on his excellent job this year. Of the Hawkins statement Miles said: "It pains me to find that anyone believes in the abolition of shows just at the time when I am getting my hand in and finding out how to run them."

Lest we forget, a good many dealers believe that much of the success of the selling program for this show was due to the training of the salesmen in the necessity of properly and seriously meeting the public that came there.

N. A. D. A. Considers National Merchandising Cost Survey

Proposal to Establish a Standard Cost of Doing Business Meets With General Approval, Following Consideration of Partial Figures

THE National Automobile Dealer's Association in the Sixth Annual meeting in Chicago last week, authorized the Board of Directors to negotiate with the Harvard Bureau of Business Administration for the making of a survey of the automobile merchandising field. The feeling was strongly in favor of such a survey and it is likely that it will be undertaken. This survey will be similar to those made by the Bureau in the retail shoe and grocery field. The objective is to establish a standard cost sheet of an automotive mercantile establishment, something that will tell a dealer why he is not making money and will serve as a warning to those who contemplate entering this business as to what is necessary if they expect to make money.

The Sixth Annual meeting was much the best meeting this Association has held. Under the membership arrangement announced last year the Association now consists of more than 700 members who pay from \$50 to \$250 a year instead of several thousand who paid \$10. Of the membership, 450 registered at this meeting. It was easily seen at the meetings that the N. A. D. A. has been quite discriminating in its membership selection. It was also notable that there was a larger and more earnest attendance at the two-day meeting than ever before.

The peak of interest was shown at the used car session. The basis of the used car discussion was a questionnaire which the Association has circulated.

Perhaps the strongest interest in the meeting, really the text of all discussions and the yardstick by which discussions were measured, were the results of recent questionnaires circulated by the N. A. D. A. and which were reported on by C. A. Vane, the general manager. One of these reports pertained to dealer mortality. The replies show that, despite the tremendous business done, 1922 had the highest percentage of dealer failures of four recent years. In 1919 10 per cent of the dealers in the business failed to see the year through, in 1920, 12½ per cent, in 1921, 20 per cent, and in 1922, 25 per cent. He contended that more information on costs, enabling dealers to compare their figures with averages in dealerships of different kind and type, would bring

Officers of the National Automobile Dealers' Association

President—G. G. G. Peckham, Cleveland, Ohio Buick Co.

First vice president—John L. Butler, Kansas City, Dodge.

Second vice president—Chas. E. Gambill, Chicago, Marmon-Hupmobile.

Treasurer—F. W. A. Vesper, St. Louis, Buick.

Directors—Elected to 1924.

Grand central division, northern district—J. S. Harrington, Minneapolis, Hupmobile.

Elected to 1926

Grand eastern division, eastern district—C. B. Warren, New York—Nash.

Grand eastern division, central district—John L. Bovis, Cincinnati, Oldsmobile.

Grand central division, southern district—Glider Abbott, New Orleans, Packard.

Grand western division, northwestern district—W. L. Eaton, Seattle, Dodge.

Holdovers

Grand western division, central district—Tom Boterill, Denver, Hudson and Essex.

Grand western division, southwestern district—P. H. Greer, Los Angeles, Hupmobile.

Grand eastern district, northeastern—A. J. Shorey, Boston, Vellie.

Grand southern division, central district—Geo. O. Wildhack, Indianapolis, Reo.

Grand southern district, southwestern district—R. H. Martin, Atlanta—Nash, Lafayette.

down the percentage of failures, improve competitive conditions and stabilize trade.

This survey made in 47 dealer establishments in various states shows: Costs, based on gross sales, averaged almost 8 per cent in the wholesale department, 12 and a fraction per cent in the retail, nearly 10 per cent in the used car department, 8 per cent in the parts department, almost 41 per cent in the

shop and a little less than 7 per cent for general administration. Stock was turned over, on the average, 5456 times a year.

It was this showing that deepened the interest in making the survey of the dealer field to establish a cost sheet to let dealers know whether or not they are making or losing money, if their dealer costs are too high and in what particular they are too high.

Vane also offered a report on used car transactions that was the foundation of the used car session. As a result of questionnaires Vane estimated dealers' losses in used cars in 1922 at one hundred million dollars. He explained that the estimate was based on a survey of dealers' experiences with used cars in six states.

On the used car issue there was no discussion of any national co-operative plan, as gossip had the story during the week in Chicago. The convention heard Guy S. Garber of Saginaw, Mich., and L. B. Sandes of Boston tell about association cooperation in handling used cars in their communities. W. Pitt Barnes of Cleveland told of his own used car plan, which regards used cars as a business wholly separate from new cars. General sentiment was expressed for extension of the idea of cooperation to many cities which now have no used car plans and one member inquired if the N. A. D. A. could send organizers around the country to form active trade associations with used car plans. It developed that the cost would be prohibitive.

General Manager Vane said that every effort would be made to inform dealers how used car plans could be organized and offered to facilitate distribution of the Manual of Used Car Cooperation issued by the National Association of Automobile Show and Association Managers. This manual presents the forms and other necessary machinery for organizing a used car plan in any city where a considerable group of dealers are able to agree on cooperation and finance it.

Vane announced an arrangement by N. A. D. A. to furnish its members with copy for an advertising campaign with two objects:

First, to build public confidence in the dealer organization.

Second, to create confidence in used cars as serviceable merchandise.

Something like 30 ads already have been prepared and will be sent out to members. They will bear the "One of the Thousand" emblem of the association.

The N. A. D. A. suggestions to manufacturers, in the form of resolutions, were enthusiastically and unanimously adopted.

Outside of cost and the used car, the convention had two strong features in an address on "Future Tendencies in Automobile Merchandising" by Harry Tipper of the Class Journal Co., which publishes MOTOR AGE, and a salesmanship talk by J. S. Knox, head of a sales school in Cleveland. Tipper's address appears elsewhere in this issue.

The dealers devoted more time to the used car issue and showed more interest in it than in any other feature of the program. Not only did the subject hold exclusive attention throughout the session announced as a used car forum, which drew an attendance of more than 300 as compared with 100 to 200 for the other sessions, but used cars kept bobbing up in the discussion from the opening to the close of the convention.

With General Manager Vane's estimate that dealers had lost \$100,000,000 in 1922 in used car trading as the keynote, the used car forum got under way with an address by Guy S. Garber of the Garber-Buick Co., Saginaw, Mich., who told of the seven years' successful operation

of the Saginaw maximum allowance plan. Garber attributed the success of the plan to the willingness of the dealers to hold themselves together in a close-knit association holding frequent meetings and frankly discussing at these meetings general and special conditions in the used car market. The Saginaw plan is familiar to readers of MOTOR AGE.

Following Garber, L. B. Sanders, secretary of the Used Car Statistical Bureau, held his big audience for more than an hour with a discussion of the underlying reasons for used car losses, supplemented by a brief description of the Boston plan, which is a modification of the Saginaw arrangement; that is, it includes a weekly information service on used car allowances and sales and a maximum plan.

W. Pitt Barnes, president of the Barnes Motor Car Co., Dodge Brothers dealer in Cleveland, told the convention that when he came to the realization, a little more than a year ago, that, like many other dealers, he would "take full list price from a new car buyer on a 'clean' transaction and cut the price \$200 or \$300 for the fellow with an old car" he changed his system to become a used car merchant. Barnes opened a separate used car establishment, where a used car manager and two appraisers are buyers and a used car sales staff is employed. Used cars are bought, not taken in trade, sometimes for cash, sometimes in part payment for a new car. Cars

that are not readily salable are not accepted. "When a prospect comes in," said Barnes, "we look him in the eye and offer cash for his used car and demand cash for the new car."

Barnes completely reconditions Dodge Brothers cars and puts others in reasonably good condition and states their condition to buyers. He adds to the purchase price on used cars 15 per cent, exclusive of reconditioning cost.

Reminding the audience that the business is becoming largely a replacement business, Barnes warned his hearers that they cannot prosper if they try to sell two cars for the profit on one.

In the discussion that closed the used car forum General Manager Vane called attention to the fact that the average new car demand is for a \$1000 car, while the average used car buyer wants to pay \$300. A good many dealers were in difficulty, he said, because they think used car buyers in the main are willing to pay \$500 to \$600.

In announcing the N. A. D. A.'s used car advertising service and supporting the estimate of a \$100,000,000 loss in 1922 on used cars, Vane submitted in printed form to the delegates the report of a used car survey covering six states. The one hundred million dollar estimate was arrived at on the basis of the figures in the survey, as compared with the total number of dealers in the country. A summary of the survey follows:

	Illinois	Ohio	New York	Pennsylvania	Iowa	Indiana
Total number of inquiries.....	2,697	2,450	2,533	3,120	1,775	1,377
Total number of replies.....	367	363	395	556	280	190
Total of complete replies.....	330	328	346	474	245	170
Total of rejected replies (incomplete).....	37	35	49	82	35	20
ALL TRADES						
Number of dealers reporting.....	330	328	346	474	245	170
Number of used cars on hand.....	3,082	3,619	3,828	4,344	1,754	1,881
Actual cost of which acquired.....	969,877	1,223,351	1,546,436	1,680,820	459,459	535,763
Actual cost per car (average).....	311.11	338.03	404.24	386.49	262	295.45
Present actual value reported.....	690,749	1,127,628	1,346,658	1,375,622	382,525	470,455
Actual value per car (average).....	220.58	311.58	352.09	316.66	219.09	250.10
Total loss in value.....	279,128	95,723	199,748	305,098	77,024	85,318
Average number of cars per dealer.....	9.04	11.03	11.06	9.16	7.16	11.06
Average loss per car.....	90.53	26.45	52.15	70.23	43.91	45.35
Average loss per dealer.....	845.84	291.83	577.27	643.88	314.38	591.87
TRADES AT LOSS						
Number of dealers reporting.....	197	165	219	278	144	103
Number of used cars on hand.....	2,267	1,910	2,895	3,013	1,272	1,456
Actual cost at which acquired.....	772,303	712,955	1,200,518	1,222,822	363,776	449,310
Present actual value reported.....	579,811	573,223	972,871	877,412	276,163	345,304
Total loss in value.....	201,492	139,732	227,647	345,410	87,613	104,006
Average number of cars per dealer.....	11.5	11.57	13.21	10.8	8.83	14.13
Average loss per car.....	85.12	73.10	78.63	114.64	69.53	72.11
Average loss per dealer.....	1,022.40	846.50	1,039.48	1,170.54	608.42	1,009.76
TRADES AT REPORTED PROFIT						
Number of dealers reporting.....	50	84	54	77	47	37
Number of used cars on hand.....	519	1,087	660	875	397	273
Actual cost at which acquired.....	117,090	329,222	232,336	308,868	56,598	76,138
Actual value reported.....	139,454	373,231	269,195	349,660	67,187	94,826
Total gain in value.....	12,364	44,009	27,759	40,852	10,589	18,688
Average number of cars per dealer.....	8.79	12.94	12.22	11.36	6.53	7.38
Average gain per car.....	23.82	40.48	42.04	46.46	34.49	66.04
Average gain per dealer.....	209.55	523.91	514.05	530.55	246.57	505.08
TRADES WITHOUT GAIN OR LOSS						
Number of dealers reporting.....	44	47	37	59	30	21
Number of used cars on hand.....	296	47	273	466	175	152
Actual cost at which acquired.....	80,484	662	113,582	149,350	39,175	30,315
Actual reported value.....	80,484	181,174	113,582	149,350	39,175	30,315
Average number of cars per dealer.....	6.72	181,174	113,582	149,350	39,175	30,315
Average cost and value per car.....	271.90	13.23	7.38	7.9	5.83	7.23
DEALERS WITH NO USED CARS						
Number of dealers reporting.....	30	32	30	60	24	9
Average capital investment in used cars—All dealers.....	2,812.43	3,728.47	4,470.89	3,547.42	1,885.92	2,267.78

The proposal for a survey of the cost of doing business in the automobile field was introduced through the appearance of Richard Lennihan, assistant director of the Harvard Bureau of Business Research. The Bureau, having made cost surveys in the grocery, shoe and several other retail fields, would like to undertake such an investigation in the automobile business but would have to have financial assistance from the trade. He later discussed with the board of directors the possibility of the N. A. D. A. financing the work.

Lennihan, while talking of costs generally, directly touched conditions in the automobile field when he said that one of the worst forms of competition is that of the man who is doing business at a loss and doesn't know it. It takes him four or five years generally to go into bankruptcy, and in the meantime he cuts prices and takes business away from competitors who are operating on a sound basis.

Checking Costs Against Averages

The value of a cost survey in a business, Lennihan said, is in the standards it sets up for men in the trade to go by. They can check their own costs against the averages for businesses of their kind and size and so learn where it is possible to effect savings by more economical or more efficient methods.

The Bureau, while desiring to make a cost survey in the automobile field to obtain information for use in the classes at Harvard, would prepare the information in comparative form for the trade, Lennihan said. He showed books issued for several other trades, all of which, he said, were in constant use in these trades.

In connection with Lennihan's talk, the association placed in the hands of delegates printed copies of a summary of the N. A. D. A. cost survey covering a small number of typical dealer establishments. The summary follows:

"Compared to general merchandising lines, the automobile business has a much more rapid stock turnover—as indicated in the information compiled from a study of costs of operation, conducted by the National Automobile Dealers' Association late in 1922. Forty-seven members of the association filed questionnaires which contained information that could be used. These figures disclosed that these 47 dealers had a total investment of \$8,375,418 in 1921 and that their total volume of business in that year was \$44,685,888.44, which represented a turnover of 5.456 per cent. Similar studies by the Harvard Bureau of Business Administration showed stock turnover in the retail jewelry trade was .08 per cent, or once in 15 months; in the department stores was three times a year and in the retail shoe stores 1.9 times in the year.

Costs of operation in the automobile business, revealed in this preliminary study by the N. A. D. A., in the various departments, present averages as follows:

Cost of operating wholesale department, 7.997 per cent.

much lower administration average than was reported from the east.

Cost of operating retail department, 12.418 per cent.

Cost of operating used car department, 9.754 per cent.

Cost of operating parts department, 8.304 per cent.

Cost of operating shop, 40.716 per cent.

Administration cost, 6.938 per cent.

The minimum wholesale department cost listed was .24 per cent and the maximum was 35.5 per cent. It may or may not be significant, but the members from west of the Mississippi reported a

13.5 per cent to 79.3 per cent. Of the 47 questionnaires only five members reported a cost of less than 20 per cent and seven reported a cost of more than 50 per cent.

Administration costs seem to be as uniform as the costs of the parts department. The lowest administration cost reported is 2.26 per cent, while the highest ran to only 11.88 per cent. The majority of figures furnished held closely around the 6 per cent mark.

For purposes of comparison, some of the reports were grouped by states. These show that the average of those reporting from California is an investment of \$719,332.48 and the average volume \$2,459,041.62, or 3.975 times this investment. This is the largest average volume reported. The various department averages are:

Wholesale department, 2.92 per cent; retail department, 11.022 per cent; used car department, 7.312 per cent; parts department, 7.79 per cent; shop department, 38.197 per cent; administration cost, 5.945 per cent.

Sufficient replies were not received from other states to make any grouping that would be significant.

The average of those reporting is \$182,074.49, with a reported average volume in 1921 of \$971,449.74.

Study, Thought and Work Needed

A salesmanship talk was delivered by J. S. Knox of the Knox School of Salesmanship, Cleveland. The need of the day in selling, he said, is **study, thought and work**. Knox said any dealer or any salesman must have a program to work on. He needs to know his program, to know the difficulties in the way of completing it and to know what facilities can be used to overcome the difficulties. There is as much need for strategy in business as in war, he said, and the salesman's strategy must be employed to induce people to buy what they need. He stated the new idea in salesmanship in these words:

"Study the man you want to sell to learn what he needs, then help him get it."

In an automobile some buyers want utility, others comfort or beauty or something else. Find out what it is, Knox urged, and help the buyer to get what he needs. He suggested that in every dealer organization there should be made up a list of motives that induce people to buy a car of the type the dealer sells, and that salesmen should know the list and make it their job in approaching a prospect to look for his motive or motives and cultivate them.

The N. A. D. A.'s slogan, "One of the Thousand," does not mean that membership is to be limited to that figure. Membership is open to any dealer who has been in the business for two years or more and who can pass the association's examination of his policies as regards square dealing with the public and fellow dealers in his community. The slogan simply means that an N. A. D. A. dealer, having brought his establishment



G. G. G. Peckham of the Ohio Buick Co., Cleveland, who is president of the National Automobile Dealers' Association

In all other departments with the exception of the shop, the percentages ran pretty even both from east and west. In the shop it is again noticeable that there is a difference in the figures, the cost in Ohio, for example, being greater than in either Washington, Colorado or California.

More Uniform Cost in Parts Department

A digest of the figures shows that for all of the questionnaires received, the lowest retail cost was 5.49 per cent and the highest 36.1 per cent.

One firm operated its used car department at the extremely low figure of .86 per cent. Another member, handling the same line of motor vehicles and doing business in a city of the same classification reported the greatest cost of used car operation. Its figure was 26.37 per cent.

A more uniform cost obtains in the parts department, where the lowest is found to be 4.213 per cent as against 15 per cent for the highest. One firm was exceptional, with a figure of 23.60 per cent.

Costs differ most in the shop, and apparently it is the most expensive department. The range of reports ran from

up to a sound business standard, may call himself "one of a thousand."

The new membership plan was adopted a year ago, and since its inception the association has accomplished the following results, as summarized from General Manager Vane's report:

Saved N. A. D. A. members a total of \$210,000 on their insurance premiums by placing their coverage in N. A. D. A. carriers and making competing companies meet N. A. D. A. rates.

Placed coverage amounting to more than \$6,000,000 in N. A. D. A. companies at premium reduction of 20 to 35 per cent over rates in effect prior to our entry in field.

Forced all companies in business to make reduction on Nov. 5, 1923, of 20 per cent in MANUAL RATES for liability insurance.

Provided uniform Workmen's Compensation (Employer's Liability), Public Liability and Property Damage policies.

Brought out Guaranteed Storage Policy which permits ONE OF A THOUSAND members to protect customers' cars 100 per cent while in their possession.

Began first well studied inquiry into USED CAR problem that is causing extensive mortalities in dealer ranks. This work will be continued through coming year. Showed by preliminary inquiry that dealers lost \$100,000,000 in 1922 on used car purchases, not counting reconditioning and overhead and sales expense.

Brought about gasoline price investigation by United States Senate that resulted in immediate lowering of price of two cents a gallon and followed by subsequent two-cent reduction. This reduction saved motorists \$75,000,000.

Served 150 dealers with tax and legal information at Washington that would have cost them \$35,000 to obtain as individuals.

Through Detective Bureau connection with William J. Burns International Detective Agency recovered 23 motor cars for members with unpaid balances of \$15,000, removed from state of sale while under chattel mortgage.

Burns service was provided for 63 members in 27 cities.

There were 51 cases handled at no cost to members.

There were 20 cases successfully handled at a cost to members of only \$650.43, involving \$10,000 worth of property.

Four men were convicted and sentenced to 15 years in prison for misuse of members' property.

Seventeen cases of bad checks handled.

Thirty-three cases successfully handled based on delinquent accounts involving collections from \$13 up to \$3,700.

Three cases successfully handled were more than two years old and

Resolutions Passed at the N. A. D. A. Meeting

Resolved by the National Automobile Dealers' Association in convention assembled in Chicago, January 29-30, 1923, that we herewith condemn the so-called "Used Car Trading Allowance" as an unfair and unethical business practice and a deceit upon the public in its operation, and, be it further

Resolved that we respectfully suggest to the manufacturers of motor cars that the time has come to undertake such surveys of marketing conditions as will determine accurately the absorption power of a marketing territory and that production schedules of all manufacturers should be drawn up with due regard to this absorption power rather than on the mechanical facilities of plants to turn out products, or based on the similar production schedules of competitive manufacturers, and be it further

Resolved that inasmuch as dealers and manufacturers have jointly borne items of expense in the merchandising of new motor vehicles in the past that we recommend that a greater cooperative study of the used car situation made by both the manufacturers and dealers through their respective organizations and that such information be secured and plans outlined as will result in a satisfactory method of merchandising of all automotive vehicles.

Resolved that we herewith recommend to automobile dealers generally that they make a survey of the cars in general demand in their territory, that they take only such used cars in trade for which there is an active and measurable demand permitting the handling of the used vehicle at a profit, and we herewith condemn as suicidal the "unloading" of new motor vehicles by any factory or any dealer who is thus compelled to accept used car deals at prices which are ruinous to himself and demoralizing to the motor merchandising market.

had been given up as hopeless by the dealers.

The association has under way a definite concerted program calling for the repeal of the Federal excise tax, which is costing the motor buying public \$125,000,000 a year.

N. A. D. A. represented dealer interests at numerous state and Federal legislative hearings designed to increase tax burdens of industry.

Saved for than \$10,000 to members on freight bill audits and railroad rate claims.

Began first organized research to determine COST OF DOING BUSINESS in automobile distribution. In connection therewith bringing out ONE-BOOK simplified accounting system for automobile dealers (sold at cost).

Through radio broadcasts, magazines and newspapers have told public of desirability of patronizing ONE OF A THOUSAND dealers and why they can be sure of fair treatment from men of this type.

Provided a STANDARD OF MEASUREMENT by which the public can choose for itself between the reliable and the unreliable in the automobile merchandising field.

Along with the sixth annual convention the N. A. D. A. held its fifth annual frolic at the La Salle Hotel. Several hundred dealers and quite a number of manufacturers and manufacturers' representatives were present, eating a good dinner, watching an interesting vaudeville entertainment provided by the Chicago Automobile Trade Association and listening to a short speaking program.

Thomas J. Hay, Chicago Chandler dealer and president of the Chicago association, was toastmaster. Speakers included John Thomas, president of the Central Illinois Trust Co.; George M. Graham, vice-president of the Chandler Motor Car Co., and Douglas Malloch, poet and humorist. Harry G. Moock, former general manager of the association and now sales manager of the Hudson Motor Car Co., made the presentation for the members of silver candlesticks, to William J. Brace, the retiring president.

The National Automobile Dealers' Association will make a determined effort to have the next Congress amend the Volstead prohibition law in such a way as to clearly protect the interests of automobile dealers in cars sold on time which may be seized as liquor carriers before they have been fully paid for.

A number of dealers and distributors attending the convention of the N. A. D. A. complained that despite the most careful efforts to determine the responsibility of buyers they had suffered losses through the confiscation under the Federal laws of cars in which liquor had been found.

Manager Vane of the association explained that the confiscation of vehicles is under an old Federal revenue statute and has been upheld by the United States Supreme Court, prior to the enactment of the Volstead Act. Since the Volstead Act became operative some of the lower courts have permitted dealers to establish liens on vehicles, under a provision of the Volstead Act. Other courts, however, have not been quite clear as to whether this provision of the Volstead Act superseded the old revenue law and have continued to apply the old law which does not recognize any liens against a condemned vehicle.

This point has never been decided by the United States Supreme Court, dealer organizations hesitating to incur the expense of an appeal. In view, however, of the conflict between the two laws it was thought by the N. A. D. A. directors that the best solution would be an amendment which would definitely repeal the confiscation clause of the old act insofar as it relates to automobiles and definitely provides for the protection of a lien in case the dealer has used proper care in making the sale. Such an amendment already has been introduced and has passed the Senate, but it is felt that there is no chance to get it through the present session of Congress. It will, therefore, be pressed at the next session.

S. A. E. Hears Advanced Maintenance Methods

Three of Four Speakers Representing Service Work Are Engineers. Application of Electrical Equipment Standardization

By B. M. IKERT

"THOSE who serve best will be the ones to survive," is what E. S. Jordan said at the Chicago S. A. E. dinner on Wednesday night of Chicago show week, and the same words might be taken as representing the combined opinions of those present at the technical sessions which were held during the day.

This annual session of the S. A. E., as for several years past, was entirely devoted to service. The attendance was better than at previous years, but the message does not seem to have reached the practical service man that this meeting is primarily service and not engineering. There were some practical service men present, but not as many as the host society wants. After the meeting one of the practical men present expressed the opinion that the meeting was "great for the service men but not much for the S. A. E." However, the S. A. E. men promoting the meeting regard the session very highly from their own point of view, as it is bringing their members closer to the application of the jobs they design and this practical use of the designs must govern the designs of the future.

Engineers In Service Work

Also it was rather notable at this session that three of the speakers, Hastings, Funderburk and Packer, are engineers and all have done engineering work before taking up the service work and each of these men is just as proud of their present standing in service work as Page, the other speaker, who comes to his present position by the other route.

There were four papers presented and with the exception of one, all were devoted to that phase of service or maintenance which concerns particularly the dealer and car owner. That service is rapidly coming into its own was manifested by the lively discussion which followed the paper presented by Don T. Hastings, vice-president in charge of Williams & Hastings, Inc., Detroit Hupmobile distributor, on the development of a modern service system. Hastings' subject was "Development of a Modern Service System."

While the paper by Hastings dwelt particularly on service from the dealer viewpoint, there was much of his paper directed to the manufacturer. For instance, he said that the builders of cars themselves were responsible in a great many cases for the high prices charged for service because of the exorbitant prices they had put on repair parts. The dealer, of course, could do nothing but accept these figures, although in many cases he has followed the builder's

example and added a high percentage to the factory price of parts in the guise of a charge for handling, freight, express and the like.

Most makers and dealers have failed to realize that first class service is one of the best aids to the sales department. Owners are buying cars more and more on the basis of good service, said Hastings. The average owner would be satisfied to own any one of the four or five cars which are about in the same price class, but he is almost certain to inquire first about the service which the factory and dealer are able to render.

Talks Flat Rate and Piecework

The greater part of his paper was devoted to the flat rate or piece work system of selling service. His company has used the piece work plan for some time and according to Hastings it would seem that this is the ultimate solution of the great troubles which have arisen in the past between owner and dealer as to prices for the work. The piece work plan also seems to be working out better with the mechanics in the shop. Hastings paper will be printed in full in an early issue of MOTOR AGE.

The second paper to be presented was that of J. F. Page, general manager of service, Packard Motor Car Co. Chicago, which was entitled "Automotive Service Co-Operation Between Manufacturer and Dealer." He stated that while much has been done during the last few years to elevate the service of factory and dealer, there still remains much to be done, both on the part of the factory and dealer. The factory he said, must not be expected to assume entire responsibility for the quality of service rendered by the dealers. As great a share of the burden falls upon the dealer's maintenance department.

Factory Contact With the Field

One phase of Page's paper dealt with the familiarity of the factory with conditions in the field. Such knowledge, he said, can be obtained only at first hand; that is, by personal contact with the service man and an appreciation of his problems. Certainly it stands to reason that a manufacturer must be interested in the product he has made after it leaves the factory.

Especially is this true when we stop to think that a maker has spent hundreds of thousands of dollars in machinery and equipment to make his product only to see his product worked on in the field with crude equipment and very often, hardly any equipment to speak of. If precision tools and machinery are used

in the factory then precision tools and machinery must be used by the dealer's maintenance department to re-condition a part or unit when the time comes.

The speaker said factories should give more attention to the suggestions sent in by dealers and maintenance men. The engineering department especially should give these suggestions careful attention. Tests of a product in the hands of users very often give a better clue to faulty construction or design than laboratory tests and for that reason when a service man writes to the factory stating that a certain part or adjustment will not stay put his suggestions and criticisms should be carefully gone over instead of his being put down as "another bone-headed mechanic trying to tell us how to build this car."

Page pointed out the need for manufacturers following the examples of other makers who have maintained a cost department containing accurate data on parts cost, and that the prices of parts should be stabilized and listed in parts books clearly and intelligently written and arranged. Much time and money on the part of dealer and factory can be saved or lost, depending upon how well these lists are constructed.

The Factory and Dealer's Stock

The factory stock department can assist the dealer by arranging to dispose of obsolete parts which have accumulated in the dealer's stock room through no fault of his. The factory should be able, he said, to inform the dealer's stock man in regard to the necessary parts and amount of stock to carry with reference to the number of cars of a given model in the dealer's territory. This would often do away with an unnecessary amount of stock.

We have seen this work out in service where a part might break on a car and immediately the dealer's stockman gets the impression that the part must be faulty in design and therefore, orders a quantity of them. The same part may never give any more trouble and had the dealer asked the factory, the latter could have informed him and saved him much money in not ordering these parts. The factory in most cases knows which parts may or may not give trouble from breakage and usually it is in the best position to tell the dealer what parts he should stock.

Time-studies and standard methods in repair operations can be worked out at the factory, Page said, and these are of utmost value to the dealer's maintenance department. This not only makes it

better for everyone concerned, but assures the establishment of flat rate prices for the various repair operations.

As long as there seems to be a rapidly growing tendency towards the flat rate or piece work system of selling service, it would seem that the car makers could contribute much of value in the way of telling the dealers how the repairs and adjustments can best be performed on their cars. This, of course, brings in such things as labor saving equipment and special tools to speed up work.

New car inspection at the factory, the speaker said, is probably as great an item as any in the way of bettering service and getting more co-operation from the factory. The new owner's first impressions are usually the lasting ones and if he has trouble very soon after he gets the car, he has anything but a friendly attitude towards the factory and dealer alike.

L. C. Hill, assistant general manager of the S. A. E. read a paper which had been prepared by Otis C. Funderburk of Funderburk & Mitchell Co., Boston Lincoln and Ford dealers.

Bettering Dealer's Service

This paper was devoted chiefly to an exploitation of the many small things a dealer's maintenance department can do to better its service. As an example, the paper stated, when this company is called out to tow in a wrecked car another car, usually a sedan, accompanies the tow car for the purpose of bringing home the passengers of the disabled car.

Dyke's Automobile and Gasoline Engine Encyclopedia—Thirteenth Edition

THE thirteenth edition of Dykes Automobile & Gasoline Engine Encyclopedia has been completely rewritten, rearranged and greatly enlarged. It offers a ready reference for the dealer, maintenance man, car owner and student. Essentially there are thirteen major divisions to the book, these being:

- 1—Assembly of the Automobile.
- 2—The Automobile Electric Systems.
- 3—The Storage Battery.
- 4—Wiring Diagrams
- 5—Ignition and Carburetion.
- 6—Tires.
- 7—Garage and Shop Equipment.
- 8—Repairing and Overhauling Engine and Car.
- 9—Oxy-Acetylene Welding.
- 10—Commercial Cars.
- 11—Tractors.
- 12—Ford Car, Tractor, Etc.
- 13—Data, Specifications, Horsepower, Useful Information.

These subjects are supplemented by special instructions and illustrations on the Ford car and Ford wiring systems; the airplane and Liberty engine; Continental engine; Dixie magneto and engine construction in general.

The book is devoid of mere technical

The talk was illustrated by slides which showed in detail much of the shop equipment and tools devised by the company to improve its shop work. Some of these, instead of being devoted to handling jobs of a big nature, were confined to operations which are small but are capable nevertheless, of slowing up a repair job if tools are not available. Thus the job of compressing a valve spring in a vise and tying it with wire before inserting it into the valve stem chamber is a tedious one and this company has developed a device which does this very quickly.

Funderburk laid much stress upon the proper presentation of the cars to the customers when the job had been finished in the shop. The slides showed the covers which are used to protect the upholstery, fenders and other parts. Attention to these things in service, the speaker said, is probably as important as anything else.

Plea for Standardization

One of the most comprehensive papers making a plea for standardization and a resultant bettering of service conditions was that presented in the afternoon session, by A. H. Packer of Motor AGE. His paper was entitled, "Benefits of Electrical Equipment Standardization to Maintenance."

Packer brought out that present lack of standardization was a financial burden on the industry. The small town electrician is handicapped by the complication and variation in the wiring,

which only exist because manufacturers have never worked together on this detail of car construction. Trouble that car owners have accordingly reacts to increase sales resistance.

Why Standardization Is Needed

It was also shown that mechanical variations in electric generators made it practically impossible for complete stocks of parts to be carried except in the largest communities, whereas a great majority of the cars were serviced in towns of 5000 inhabitants or under. The large service stations representing the factory as far as the owner is concerned can accordingly get in direct touch with but a small percentage of car users.

In the generator field alone it is necessary to carry some 150 different types of armatures, an investment impossible for the small shop. From the electrical standpoint, however, there is no reason why five standardized machines could not be developed having five standard armatures, so that this small number would give the small shop the stock necessary to service any car that might come along. It would reduce the investment required to have an armature of each kind from \$1500 to \$50 and would make it possible for the car user to get service at any shop.

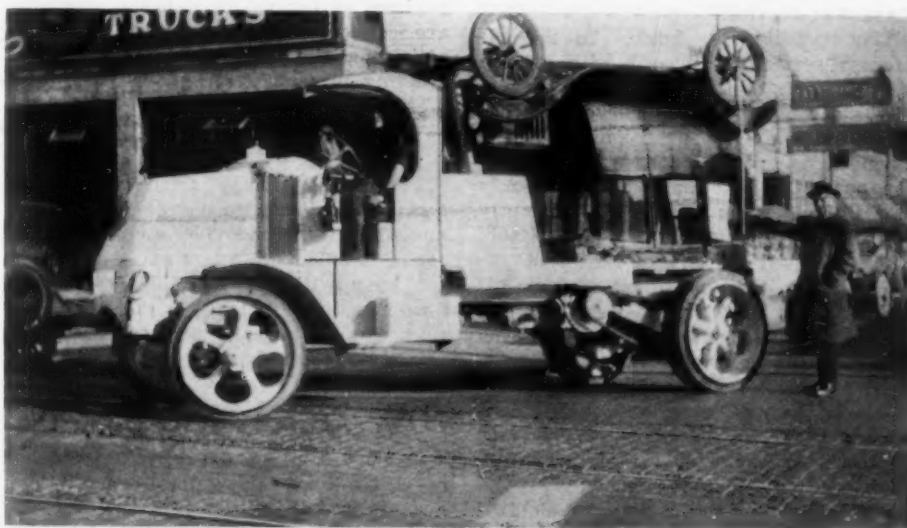
The money saving to the industry however, is far less than the advantage indirectly attainable in lower cost to the owner and the increased sales that would thereby result.

discussions. It has been the aim of the author to make the book as practical as possible. Fundamentals are discussed, but always this is done in the light of their practical relation to the subject involved.

Underlying principles involved in each subject are first discussed and many of

the old designs are illustrated and discussed in order that the developed designs of today may be thoroughly understood.

Altogether the new edition presents about as complete and thorough a reference book on automotive subjects as could be brought together.



In November, the Wm. L. Hughson Co., Ford dealers in Portland, Ore., set out to sell 175 cars. They succeeded by dint of organized and earnest sales effort coupled with novel advertising stunts in their undertaking. The cut shows one of the Ford sedans turned upside down on a five-ton Mack truck, in which manner it was paraded through the city for several days, demonstrating to prospective owners the rigidity of the body

Electrical Service Association Seeks Closer Co-Operation With Dealer

First National Convention of A. E. S. A. Discusses Flat Rate and Need of Understanding

By A. H. PACKER

ONE hundred and twenty-eight members and guests of the Automotive Electric Service Assn. attended the open session of the first national convention held in Chicago Tuesday, January 30, in the Congress Hotel. Practically all of those present attended the luncheon and utilized the opportunity to get acquainted with their fellow members and associates. In the words of Mr. P. J. Durham, president, the organization was born of necessity some ten years ago, although it is only in the last three years that its activity has been growing with greatest rapidity.

Aims of the Association

The aims and objects of the association as indicated in a pamphlet available to members and guests are:

FIRST; The discussion of subjects of interest and value to the industry in which its members are engaged.

SECOND; The advancement and improvement of that industry.

THIRD; The collection and dissemination of statistics and information of value to its members.

FOURTH; The promotion of a spirit of cooperation among its members with a view to raising the standard of service to the user of automotive equipment.

FIFTH; The improvement of the co-operation between its members and the manufacturers whom they represent.

SIXTH; The encouragement of the use of only GENUINE PARTS or replacement service.

The predominant thought in the addresses seemed to accord with section six, in which the value of genuine parts to the car user was emphasized. Recognition was given to the fact that the extended use of motor cars depends on car owner satisfaction, which can only be attained when service is promptly and accurately given and when reliable parts are used in work of this kind.

Thomas J. Hay, president of the Chicago Automobile Trade Assn., in his address of welcome pointed out the disorganized condition of affairs that existed in motor car circles some years ago and the relatively harmonious conditions that are possible with proper organization and cooperation. Hay further outlined how the growth of the electrical business as a separate field of activity had developed from the fact that the regular automotive dealers were both unwilling and unable to handle work of this kind when it became a prominent factor in service station work.

This condition gave rise to the separate electrical establishment which has now grown to such importance.

President Durham outlined the growth of automotive electrical service stations, showing how limited volume of work in any one type of equipment or make had necessitated the authorized station, which handles a large number of makes of starting, lighting and ignition equipment. Among the concerns handling automotive electrical service, it was shown that there were included electrical contractors, accessory dealers, general repair shops and radio stores. The point was emphasized that for best results, the automotive electrical service should have the very serious attention of those engaged in this work.

It was further brought out that the electrical service station has come into being to give satisfaction to the customer at the point where the average dealer leaves off, as his time is usually taken up with sales problems and those of general mechanical maintenance. In filling this gap, it would be no more than fair, said Durham, that the dealers' co-operation should be extended to the point where available electrical business would be turned over to these concerns specializing in this work.

H. R. Cobleigh, secretary of service of the National Automobile Chamber of Commerce, said in effect that service work in the electrical field is substantially the same as mechanical maintenance as far as its general problems are concerned, for it has to do with satisfying the customer and indirectly building up good will which results in increased use of motor cars.

Service the Problem Today

The question may arise as to why service problems are being so much discussed at this time. The answer is that for a number of years we have been too busy with other problems. It was first necessary to make a good car, one that would run, and our early experiments were purchased by the accommodating public.

After the problems of design, construction and production had been solved to a great degree, the problem of extending the automotive market again came to the front and this time in the form of better service facilities for the car owner so that the cost of maintenance as well as the first cost might be reduced as much as possible. This objective of course includes making

every car owner a booster and hence a salesman to his neighbor.

While possibly obvious the necessity for cooperation cannot be pressed too strongly. What for example would happen to the electrical service station, if the supply of rubber should suddenly give out so that no tires were available. Cars could not run, at least for some time until a substitute could be developed, and in the meantime there would be no need for electrical or battery service. Again assume that the gasoline supply should suddenly give out. The electrical station would again find itself without customers.

Must Get the Public's Confidence

The public at present feels that service is getting worse and worse and it is up to associations of this character to change this opinion.

Acquaintanceship which is fostered in meetings of this kind is one of the indirect assets of organization and one which has value beyond calculation. This is illustrated by the story of a dealer in New York who sent a car owner to one of the large electrical stations there. Inside of a week the car owner came back to the dealer with a long tale of woe about the poor service obtained and the bad treatment he had received at the hands of the electrical service station.

Through the local service association that particular dealer had become personally acquainted with the manager of the service station in question and could not believe the story that was told him. He accordingly obtained permission from the car owner to call up the manager of the electrical service station. When this was done it was found that the car owner had not been to that station at all, but apparently had gone to a smaller concern, thinking it was the authorized dealer to whom he had been recommended. This concern, having inadequate facilities, poor parts and no particular concern as to whether the customer was satisfied or not, had given very poor service at a high price.

The moral of the story, of course, is that acquaintanceship fostered by contact in the local association gatherings straightened out a problem which might otherwise have been a sore spot for some time to come. In the ordinary course of events and without acquaintanceship between dealer and the electrical service station representative, the car owner's statement would have been

taken on its face value and irreparable harm would have resulted. The other men handling work of this character are white men just as we are and when we meet them we find that most of our problems fade away.

Another story illustrated a similar point and brought out the advantage of association work. At a certain meeting of the National Automobile Chamber of Commerce one member complained that in his town he was unable to get any cooperation at all from the motor car dealers. Another member of the association stated that he had just the opposite experience and received all possible cooperation from the local car dealers. It then developed that in the first town there was no local association and no chance for the car dealers and electrical service station men to get together, while in the second town where cooperation was obtained there was such an association and the cooperation was undoubtedly a result of this chance for the men to meet each other.

Car owners are partly responsible for unsatisfactory service conditions when they leave a car and say, "Fix it up, when can I get it?" and then go away with no definite idea as to what the cost will be. While uninformed as to the price of the job, the car owner unconsciously fixes in his own mind a figure of \$5 and then when the bill comes to \$25 he naturally goes up in the air. A little questioning on his part combined with an estimated price system would eliminate dissatisfaction of this character.

Flat Rates and Piecework

To gain the confidence of the public is a matter of paramount necessity and the flat rate or estimate price system of charges is the best means available for this result. Hand in hand with the flat rate system, there logically follows the piecework method of paying mechanics and in this connection it is interesting to note that only one of the members of the association present was using a piecework method of payment. He announced that it had been in use since March, 1922, and was entirely satisfactory both to himself and his mechanics.

A poll was taken as to the approximate number of members present using a flat rate system or a system of job price estimate, which approximated flat rate usage and apparently one-third were on this basis. The one man who, in addition to the flat rate, was using a piecework basis of paying stated that 40 per cent of the flat rate labor charge went to the mechanic and on this basis wages had been increased from 25 to 30 per cent, in addition to which fact he was able to work his shop with two less men than formerly.

J. A. Shank, service manager for the Auto-Lite Company, talked as a substitute for C. O. Miniger, president of that company, who was unable to be present. He expressed the idea that an association such as the Automotive Electric

Service Assn. affords means whereby the individual members may present their ideas to the makers of electrical equipment much more effectively and conveniently than would be possible otherwise. He also brought out the necessity of giving sufficient attention to the sale of parts and labor in combination.

Small Town Service Problem

L. E. Murray, editor of *Automotive Electricity*, pointed out that 55 per cent of the cars are used and serviced in or near towns of 5,000 population or under. It was further brought out that for battery service, it is necessary to go to some particular station handling the particular battery used on the car while in electrical service work it is generally possible to go to a centralized station handling parts for all cars. There is apparently no real fundamental reason why a battery service station could not handle all different makes of batteries just as a tire store can furnish any tire the user desires within a reasonable limit.

Sidney J. Stern advocated heavier advertising to the car owner to check the present use of unauthorized parts. He brought out however the difficulty of instilling this idea into the minds of some ten or twelve million users of automotive vehicles and outlined a rather elaborate plan.

The meeting concluded with a moving picture of a NorthEast film supplied by the courtesy of the NorthEast Service, Inc. This picture was instructive and appreciated by all.

At the morning session, Wednesday, Jan. 31, election of officers was held. The men installed for the present year are, president, D. W. Burke, of the Auto Electric & Service Corp.; vice-president, Arthur Jones, the Arthur Jones Electric Co.; secretary, P. J. Durham, P. J. Durham Co.; treasurer, F. W. Duffek, Electric Power Maintenance Co.

A change in the regulations was also affected and it was decided that 15 members be appointed to the board of governors instead of nine. The 15 elected are, Retiring President P. J. Durham (who automatically becomes a member of the board at retiring), Arthur Jones, Chicago; H. B. Noyes, Omaha; Adolph Wagner, Indianapolis; W. M. Ewing, Jr., Birmingham, Ala.; E. M. Bechtol, Cleveland; Joseph A. Faguy, Montreal; Ernest Ingold, San Francisco; H. F. Bush, Philadelphia; E. S. Cowie, Kansas City; D. W. Burke; H. A. Lines, New Haven, Conn.; Gordon Prentice, Seattle; C. T. Stevens, Minneapolis; R. R. Thomas, Los Angeles.

This session also witnessed the discussion of recommendations to equipment manufacturers, a discussion of the methods to improve electrical service to the car owner and the presentation of detailed data, compiled from a dealer questionnaire. At the afternoon session, members of the Automotive Electrical Assn. met the A. E. S. A. and the recommendations prepared at the morning session were presented to the manufacturers. Discussion then followed on this and other issues of interest to both associations.

23 Years Ago This Week In MOTOR AGE

(From *MOTOR AGE* of Feb. 8, 1900)

When Wanamaker Sold Automobiles

PHILADELPHIA, Feb. 3 (1900)—"Automobile Department, Main Floor, City Hall Square, near Market." How's that for a department store invention? It seems like forcing matters a little, especially in view of the widespread belief that an automobile cannot be delivered until months after the order is filed; but John Wanamaker never does anything in just the same way as others. He is at least several days ahead of his department store competitors in adding an automobile department to his establishment at Thirteenth and Market streets.

The department opened for business yesterday and all day long crowds of people filed through the aisles critically examining the vehicles, asking questions and generally disregarding the "Hands off" placards which were liberally posted on various portions of the carriages. If this radical departure does nothing else, it demonstrates that as an advertising

medium the automobile is of unusual value for such a store.

The "stock on hand" is made up of a \$2100 brougham, a \$1500 surrey and a \$1200 runabout—all the product of the General Electric Automobile Co. of Philadelphia—besides Orient gasoline quadricycles and tricycles and a De Dion tricycle and trailer, these light machines at \$600, \$450 and \$150 respectively.

Notes of Interest

Space writers are heralding the fact that W. J. Bryan has ridden in an automobile. Perhaps the day is coming when it will be a matter of newspaper comment for a public man to ride in anything but an automobile.

Park Commissioner Clausen of New York City, who at first put up a strong fight against the admission of automobiles to Central Park, has receded so far from his original stand as to go automobile riding himself.

Owners of gasoline vehicles should remember to find out whether or not a carburetor leaks before burning a newspaper under it to take the frost out.

Among the Ads Were These

"Insist on Solar automobile lamps as equipment on your vehicle. Badger Brass Mfg. Co., Kenosha, Wis."

"Steam motor vehicles. We are entering orders for spring delivery. Milwaukee Automobile Co., Milwaukee, Wis."

Why Not Cultivate the "After Market" of the Car

Here Is a Story of a Man Who Bought a Car and Then Went Elsewhere to Spend the Rest of His Money

THE writer of the article on this page is connected with an automotive manufacturing establishment. He tells this story for the good that may result. While he did not know it, the dealer from whom he bought his car has a dealership under a distributor who conducts an accessory

jobbing department, which is all the more reason for this dealer knowing something of the value of the "after market" he has neglected. This is an interesting experience told by a business man. It is strange how many dealers neglect the points that are made prominent here.

THE writer is a car owner of nearly five years' standing and the possessor of his second car, purchased last spring. When I say purchased I mean just that, because the car I now drive was not sold to me. I am not making any criticism on that score, and perhaps, after all, it is better the way it is (at least for the motor car prospect) but it may make plain the reason why some dealers and salesmen are not producing the sales their car deserves.

No doubt the purchaser gets more fun out of the transaction by buying rather than being sold, but in my case I know this for a fact; I could have been sold any one of a half dozen medium-priced cars if the proper knowledge and talent had been on the selling end. My mind was open; I had no hidebound ideas on construction and no preconceived notion or false value on the old bus. It had served me well and I had a feeling for it akin to affection, but no foolish ideas as to its value in the used-car market. I was more interested in getting the most desirable new car than in selling the old one to advantage.

I did not "repeat" on the same make, although the balance, if any, was in favor of the old dealer, but when he had his opportunity to make me a "repeater" he emphasized how hard it was to get cars instead of selling me a new car and the improvements over my old one. Nothing was said or done to indicate that I wanted credit. I had the money in the bank and was a cash customer; yet he elaborated on his liberal financing plan, easy payments.

Salesmanship Lacking

In my rounds to determine the best car, I failed to meet up with the caliber of salesmanship that I have encountered selling bonds, lots, and building specialties.

In setting down my impressions on paper I am doing so after analyzing them from an unbiased viewpoint. I was in the market for a new car and had only one restriction, namely, my limit was about \$1800 to \$2000. My experience is therefore confined to cars selling between \$1000 and \$2000.

One salesman was way ahead of the "take it or leave it" class, but he tried his best to sell me a four-cylinder car when my preference was for a six. I want to give that young man credit, however, for being resourceful and clever far

beyond his years.

Another salesman, faultless in attire, did not know if the pistons in his car were made of gray iron or other material. His attitude was "There it is, isn't it a beauty. Why worry about the internal parts; they are all there and only for mechanics to tinker with." These men were the two extremes. In between were a dozen or so of salesmen—good enough fellows all right, but none with any special training either in selling or on the advantages of their particular car.

A Wasted Opportunity

Upon delivery of the new car a card was handed me to be filled out and mailed to the manufacturer. This for the purpose of securing an instruction book. The book reached me in due time by third-class mail, but here is where, in my humble opinion, the manufacturer fell down and failed to sow the seed that would make an enthusiastic booster for his product, which, by the way, is as good as is humanly possible to make a mechanical unit. But his knowledge of human nature falls far short of his mechanical ability. I had made an investment of almost \$2000 and had made a selection that I conscientiously believed to be the best for the money. Suppose I had received a letter something like this from the manufacturer:

"Dear Sir: Your card saying that you are the owner of a new 'Spiffy Six' reached us today. We feel sure that you are going to like it. It is built as well as we know how. A 'Spiffy' instruction book is being sent you by this mail. If it does not reach you within a reasonable time please write us. If there is any information you want that is not included in our book, please do not hesitate to communicate with us. We are always glad to hear from 'Spiffy' owners."

What an opportunity—and it was passed up without a word. How simple it would have been to build good will at little expense.

"But," you say, "perhaps a letter of that kind would leave an opening for an unusual number of complaints and requests for free service." I doubt if it would. The average car owner expects no more than is coming to him. If difficulties arise, as they sometimes do (because we are all human), the owner would be more inclined to blame himself

if he received a good-will letter than if the manufacturer acted as if business relations with his customer were closed. I take it that when a man invests in a passenger car or motor truck his relations with the dealer and manufacturer are just commencing, and not just being closed.

The dealer from whom I purchased the car has my name and address. He knows me personally when we meet, but he has failed entirely to make me a source of profit for himself. I bear him no ill-will—on the contrary, I feel that he has been fair and square and entitled to any business he can get from me. In the time since our business relations began I have not had a word from him. He has had no suggestion to offer and evidently nothing to sell me. As a result, while he retains my respect as a man, he is losing my respect as a live merchandiser. I have purchased \$47 worth of additional equipment, but he did not get the sale because he never suggested anything either by word or by letter.

Keeping Contact With the Buyer

A letter two or three weeks after the purchase of the car, calling attention to draining the crankcase, a few brief lines pointing out the advantage of having fresh, clean oil, particularly in a new engine, would establish the habit of coming to him for oil, and most of us live by habit. Early in November a suggestion to come in for anti-freeze and a radiator attachment would have brought a few dollars profit.

A dealer or salesman may think that these experiences are the exception rather than the rule, but a little observation and investigation will probably bear out these conclusions. Only yesterday a friend of mine was talking about a new car. The car he now owns is five years old. He can afford a new one. I know for a fact that he could be sold any one of a half dozen makes in the medium-priced class. The first salesman with average selling ability, representing any one of the many standard makes and a fair knowledge of that make will get the order. This prospective sale could have been an accomplished fact any time within the past six months.

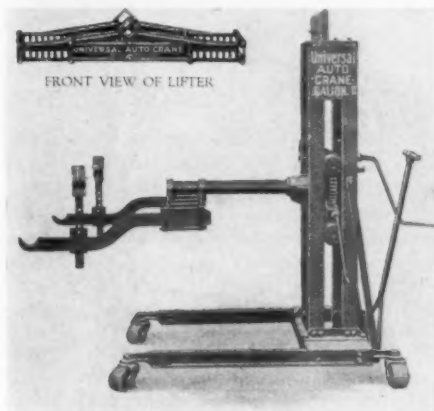
Nineteen twenty-three will undoubtedly be a good year for the dealer or salesman who has a nose for prospects and knows his car.

Shop Equipment Feature of Chicago Show Accessory Exhibits

*Fitments for Motor Car Rapidly Becoming
More Practical*

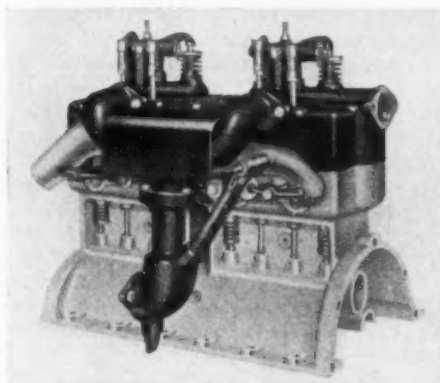
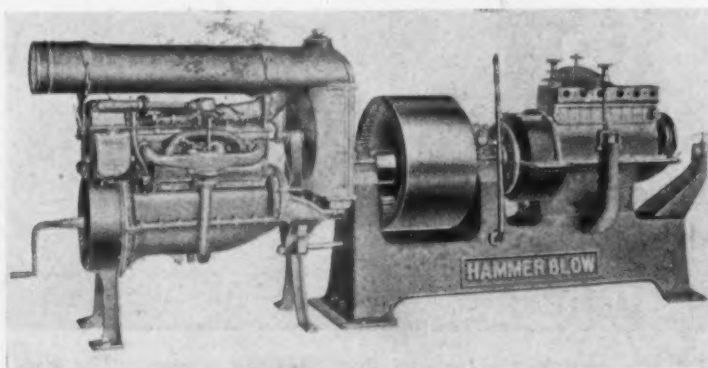
UNIVERSAL AUTO CRANE

The Harmony Distributing Co. is the Chicago representative of the manufacturers of the Universal Auto Crane, a device which can be used for nearly every service operation in the shop. Among the points of interest concerning this crane are its all steel construction and a chainless jack principle applied for hoisting. It rolls on four wheels and cannot tip because of the use of roller bearing casters. Capacity is $\frac{3}{4}$ to $1\frac{1}{2}$ tons. Price, \$210.



HOUPERT PISTONS

The Houpert Machine Co. of Long Island City, New York, has a line of light cast iron pistons, that they are furnishing to the trade. This concern formerly operated a high class machine shop in New York City, making ring gears and sprockets for starter application, and doing a general overhaul and regrinding business. For their own work they made their own pistons, and eventually worked over to the point of supplying material of this kind to other shops. Their experience in work of this line is reflected in their exhibit at the show.



RAJO VALVE-IN-HEAD FOR FORDS

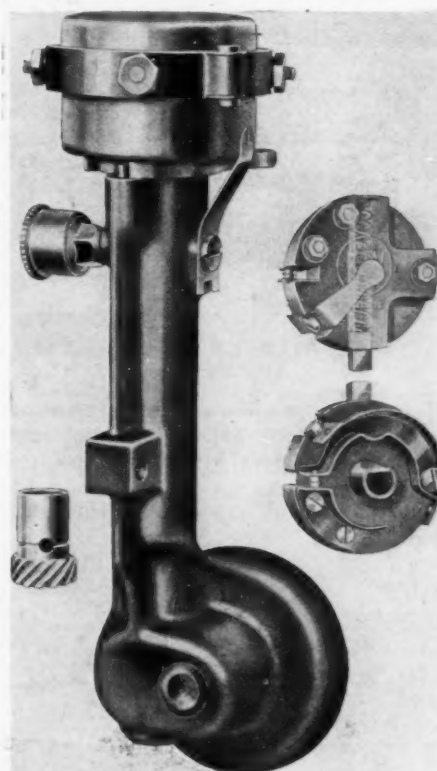
Rajo has made several changes in its cylinder head for Fords, particularly in the rocker arm mechanism. The model A head adds only 15 pounds over the weight of the Ford cylinder head. It has no connection with the Ford starting and lighting system and the regular Ford camshaft is used. The compression increase per cylinder is less than 10 pounds.

The head is made of cast iron and fitted with four intake valves, having a clear diameter of $1\frac{1}{8}$ in. The regular Ford exhaust valves are used. The rocker arms are steel, drop forged and pivot on a $\frac{5}{8}$ in. shaft. All of these parts are hardened and ground to size. The lower end of the intake pipe is surrounded by a hot air jacket.

No changes of carburetor are necessary, but for maximum results the larger carburetor is advisable. All cooling connections are the same as when the regular Ford head is used. Standard $\frac{1}{2}$ in. spark plugs are fitted and these are inclined at an angle of 25 degrees on the opposite side of the exhaust valves. Only two special cylinder head bolts are required. All moving parts of the valve mechanism are enclosed. Made by the Rajo Motor Products Company, Racine, Wisconsin.

K-W TIMER FOR FORDS

The K-W Timer for Fords is made by the K-W Ignition Co., 2811 Chester Avenue, Cleveland, Ohio. A feature of the K-W is the fact that it is elevated so that no oil or dirt can come in contact with the electrical parts. Another feature of the timer is control effected by a circuit breaker. This circuit breaker closes the timer current only when the contact arm is on the metal segment and opens it again before leaving it. Price, \$6, complete.



HAMMER-BLOW BURNISHING MACHINE

The Hammer Blow Tool Co., Wausau, Wis. has brought out a Fordson direct connected power plant attachment to be used with their Type 16-F Burnishing Machine. As shown in the cut, the Fordson makes possible the operation of the machine without the use of the regular electrical power plant. This is especially desirable where the dealer has not the use of electricity at all times. List price, sold with the Type 16-F, \$105.

THE VOLCO BUMPER

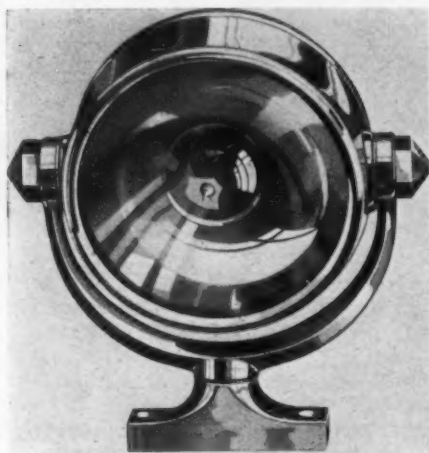
A bumper designed for the better grade of cars is the Volco, handled by the Volator Company, Chicago. Tubular steel is the basis for its construction, and over the parallel steel tubes, heavy rubber sleeves are used. These sleeves are made in various colors, so that the bumper may be made to harmonize with the finish of the car.

Eight colors are offered—black, white, grey, yellow, blue, green, maroon and red, and all styles of bumpers are made with nickel capped ends. Universal fittings are used so that installation is easily made on practically any car. Approval of the Underwriters' Laboratories is said to have been obtained which results in a 10 per cent reduction on collision insurance. Prices in different models range from \$21.50 to \$32.00.



STEWART-WARNER SPOT AND PARKING LIGHT

A novelty in the way of lighting equipment is the Stewart parking and spotlight designed for windshield mounting. This light shows up white in front and red at the rear, and uses a double fila-



ment bulb, operated by a lever type switch which makes it easy to turn on either the bright or dim light. The large filament, of course, is used when the full power of the spotlight is needed, while the switch is turned so as to use the small filament when the car is parked. The price has not yet been announced.

TEMME SPECIAL SPRINGS FOR FORDS



These springs are of the semi-elliptic type and resemble the regular Ford front spring with the exception that they are much longer, being just 12 inches greater in length. Their installation is said to eliminate the need of shock absorbers.

Attachment is made by special brackets which are fastened in place by the anchor bolts which ordinarily fasten the radius rods. These brackets furthermore, are flanged to fit the axle yoke, which helps keep them in place. The spring is made up with eight, nine and ten leaves, respectively for the touring car, roadster and sedan, coupe and truck. The price for these sizes are respectively \$8.75, \$9.60 and \$10.50. This includes all the necessary fittings. They are made by the Temme Spring Corp., Chicago, Illinois.

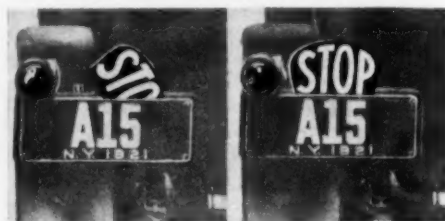
THE TROJAN SIGNAL DEVICE

A stop signal somewhat different from the average type is the Trojan, made by the Sweet and Doyle Foundry and Machine Co. of Troy, N. Y. It comprises also a very efficient tail light, and number bracket, and equipped with a six candle power bulb gives considerable light, not only on the license plate but on the ground as well.

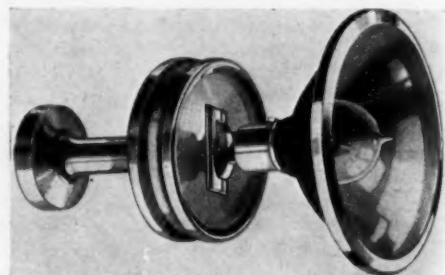
The stop portion of the device consists of a disc, pivoted, and counterbalanced, a spring normally holding the stop sign portion out of sight within the device. The spring operates on a rack, meshing with a pinion attached to the disc. Oper-

ation of the stop signal is accomplished electrically by means of two electro magnets, one of which starts the rack in motion, and the other completes the motion bringing the disc up into view and holding it there as long as the electro magnets are energized.

The price is \$12. Installation may include either a push button type switch mounted on the steering wheel or a switch operated by the brake pedal.



STEWART-WARNER WINDSHIELD LIGHT



For use in connection with closed cars, the Stewart-Warner Corp. have put on the market a spotlight that extends through the windshield so as to be operated from the inside. Universal action whereby the rays of light may be directed in practically any direction is obtained by a double cylinder type of joint.



The novel display used by the Imperial Brass Mfg. Co., showing "The Welding Kid" in action. It was made effective by a high tension spark jumping from the tip of torch

Buying Accessories—and Selling Them

Systematizing Accessory Buying; Applying "Research" Practices to Your Business; Looking Into the Future

BUYING accessories is just as important to the tuning of the cash register as selling them. Gaging your customers' wants and supplying them so that you will have a clean slate at the end of 1923 as regards accessories and tires is something that should get your immediate attention.

Your sales force should be instructed now and put to work now to ascertain as near as possible just how much of your stock of accessories will move in 1923. An effort should be made to find out whether or not your customers will be in the market for body polish or whether they are going to turn over this work to your maintenance department.

In the same manner, they should find out if your customers are going to buy two tires or four tires this year and if they are going to buy step plates or trunks. This thing of getting to the customer and asking him what he is going to buy is, of course, a difficult procedure and it would be hard indeed for John Smith to say definitely that he is going to buy two tires, because maybe he figures the ones that are on there will last all summer and maybe he won't be out a week before he'll need four.

But looking into the future and getting the "dope" on things as closely as you can will aid you materially in buying your stock. You will not be in such great danger of overbuying, and the canvass will undoubtedly aid you in locating prospects. Were we going to do this and had a force of, say, five salesmen, we would lay our plans somewhat like this:

Prepare a talk for the salesmen.

Assign them a territory.

Have them make a definite number of calls a day.

File a report on their findings each night.

In preparing the talk, it should, of course, be remembered that it is necessary to inform the customer of your intentions. After properly announcing himself, the salesman should make plain the fact that the dealer is anxious to ascertain as nearly as possible the number of accessory sales he is going to make during the coming year.

The benefit to be derived by the customer is that if the dealer knows the wants or approximate wants of his customers, he will be able to supply himself accordingly and the customer and dealer will both benefit by a saving. The saving might be explained in that if the dealer knows there is going to be a mod-

erately heavy demand, say, for shock absorbers, he can have them on hand when the customer needs them and the customer can come and get them there without wondering if "he will have them."

In order that the dealer's place may be a real place of service, the salesman promises that there will be no repeat calls when it is known what the customer believes he will need, just a letter telling the owner when the new stock is put in and the prices of the various items. This stressing of the fact that you are not soliciting for future sales will appeal to the owner, and when he receives the letter, let that be all for a while on the subject. If he does not "come in" in due time, another letter might be written, calling his attention again to a new shipment of the wares he needs.

Assigning Territories and Checking Up

Assigning men to territories with the idea that anything that comes out of the territory as a result of the canvass will be theirs is about the best way to handle your "research engineers." The men can keep their eyes open for service and car sales while compiling the accessory information. This work should be done before the spring rush, when every man will be busy taking care of sales. It should help in the systematizing of your accessory and tire department and give you a better line on what and how much you ought to carry.

Securing this information, as correctly as possible, will do away with that ever-recurring scene when the customer comes in and asks for something and you have to mumble apologetically that you haven't got it.

Having the men make a certain number of calls a day will, of course, assure you that they are working. Each man can be furnished with a printed or type-written form which will show the name and address of the call made, and underneath, the information which he gathered. On the back of the report might be written any information such as, "May be new car prospect," or "Used car prospect." Filing the reports each night when the men come in is necessary so that they may be kept orderly. Perhaps it would be a good idea to list all the tire prospects together, all the bumper prospects, all the lamp prospects and so on. By this file you can then gage what things are most in demand. You will know about how much of each thing you will have to buy.

A time limit should be placed on the canvass—when each man has been given his territory, he should be told how long he has to finish his work there. This will bring the campaign to a close at once and will better enable you to buy because you should have some statement as to the needs of everyone.

The salesman should make it plain that he is there not to sell but to gather some information that is going to be valuable, both to his employer and to the customer. Of course, care should be taken in noting the customer's attitude. If he looks like he might buy, don't ask him—make him.

It will be somewhat difficult, perhaps, to get a car owner to say just what he intends to buy, because it is a rather indefinite question, but suggestions by the salesmen to owners will probably help them in their work. Follows a list of accessories which the salesman might refer to:

- Spare tire
- Spare tire cover
- Tire locks
- Tire carrier
- Visor
- Wind deflectors
- Bumpers
- Robes
- Ash receptacles
- Trunks
- Spotlights
- Tire chains
- Windshield cleaners
- Seat covers
- Fire extinguishers
- Parking lamps
- Stop lights
- Step plates
- Rear view mirrors
- Automotive camping necessities
- Flashlights
- Cigar lighters
- Oil
- Reserve oil and gas tanks
- Radiator warning meters

With this list, the salesman can get a pretty good notion of what the customer will need, and when the complete information is secured you can judge pretty much for yourself just what your accessory stock will be composed of, how much it will cost and how much you will make on it.

BILL FOR GASOLINE TAX

DES MOINES, Ia., Feb. 5—A bill which bids fair to hold the interest not only of the automotive dealers of the state but every owner of a motor car or truck was introduced in the Iowa senate last week by Senator Caldwell of Oskaloosa. The bill would place a tax of two cents a gallon on gasoline. Funds derived from the tax would go to the construction of 3000 miles of paved roads in the state.

Future Merchandising Conditions in the Automotive Industry

Marketing Expert Says That New Car Sales Will Be of Less Importance and Servicing Will Grow. Profits Are Assured

By HARRY TIPPER

Business Manager, Automotive Industries

THE subject which I have been asked to talk about—"Future Merchandising Conditions in the Automotive Field"—would really be properly started by a consideration of the industry itself in its general aspect, from which the problems of the future might be drawn and applied to your particular part of the work.

It would be interesting to show the growth of the industry and to draw your attention again to the almost miraculous speed with which it has advanced to its present position. However, your own problem is much more interesting to you than the circumstances out of which it arises. For this reason I propose to invert the usual order of things, beginning my remarks by alluding to the main problems before the car dealer and the other important elements in the distribution of cars, drawing a picture of the general industrial outlook at the close.

Used Car Not a Separate Problem

One of the more important problems confronting you—and one which has caused a great deal of discussion—is the problem of the used car. In manufacturing and distributing circles, the question of the used car, its valuation in trade, its conditioning, its resale, and the market for it, have been the subject of much controversy and, in some cases, almost bitterness of argument. This discussion has been conducted as though the market for used cars was a separate and distinct portion of the vehicle market and could be so treated. There is no foundation for this assumption except our own methods of consideration. The car market in any locality is one market and the sale of cars in that locality will meet the market, distributing the used and new vehicles almost entirely on the basis of the relation between their values.

The car is a piece of transportation machinery, and all machinery has been subject to trade, to second-hand sale, repair and rebuilding, at all times. This problem is one which can only be solved by the manufacturer and the dealer arriving at a thorough understanding of the conditions affecting it.

In the discussions upon this point, a good deal has been made of conditions in the piano trade, the typewriter, and other lines of business, and there are advocates in the automotive industry today for a system of separating the used

car business from the new car business entirely, eliminating the trade as a part of the new car sale and permitting it to be dealt with through entirely new developments.

There is one feature of the automobile business, however, which must be taken into consideration at all times. That is, the car dealer who is handling a particular make of car is interested in the second-hand cars of that make and the manufacturer who is making those cars is also interested because, so long as a car of a particular make is running, it is either adding to or taking away from the reputation of the concern in that locality.

A Question of Reputation

This can be illustrated in many different ways, but one illustration will suffice. A neighbor of mine who was intending to buy a new car of a certain price class asked me to suggest one which would, in my opinion, give good value. I happened to know that one particular car in this class, having conquered former troubles with the vehicle, was going quite far in giving maximum value for the price set, and I suggested to him that he look it over. He said he would. A few weeks afterward he bought a car and I asked him if he had looked over this particular make. He said: "No, I didn't. Everybody who owns that kind of car in this town has had trouble with this feature and that feature, and I decided not to take a chance." So long as those cars were running on the streets and the owners were attempting to secure service from them, they would continue, in active emphasis, the reputation which their character had at first bestowed upon them.

When a man is not satisfied with a deal, even though he expects to bargain and trade, some of the dissatisfaction turns against the parties concerned as well as the condition of the deal. If a man buys a second-hand car because it is within his price value, and it has a good reputation, he expects that car to run as well as the new car his neighbor bought. He is content that it should look older, and be minus the finer appointments and equipment, but he expects it to run and to run comfortably. If, after he has bought the car, he finds that it is not in running condition, he may damn the man who sold it to him, but he will

also damn the manufacturer, however much his intelligence may tell him that the manufacturer had nothing to do with the case.

Whatever solutions are arrived at to satisfactorily balance the new and used car values, the car dealer and the car manufacturer cannot escape a very vital interest in the character of the used car sale, and the conditioning received between sales.

Used car trades will remain a definite necessity of new car sales, and the proportion of trades will constantly increase. If the used car values in trade are too high, new car sales will be made at the expense of used car movements. If the used car values in trade are too low, the used car movement will be temporarily in advance of the new sales. In either case, however, the movement of the car from the factory to the junk pile must be balanced sooner or later.

For these reasons, the condition of sale or trade on used cars should be as follows:

Basis for Used Car Allowances

The allowance for the used car should be based upon the general market conditions, and the probable depreciation, less the cost of conditioning and the percentage required to house, resell, and provide a profit on the resale transaction. Suppose, for instance, that a car is offered in trade and its market value for sale is \$600. Suppose further, that it will take \$100 to recondition the car, it will cost \$20 to store it, and \$120 should be made as an allowance for the cost of selling and profit. Then the proper trade price for that car would be \$600 less \$240, or \$360.

It may be contended that this allowance for reselling and profit is too great, but the allowance for selling and profit on the used car should be not less than the allowance for the new car, because the effort to sell costs just as much and the fluctuating market may eliminate the profit on some or cause a loss before they are sold, which loss must be taken up by the additional profit secured on others.

Sooner or later, in each locality in the country, the proportionate price for used cars of a certain age and make must bear a decent relation to the new car prices for the same product, so that the flow is orderly and there is no choking at one or the other end of the line. Sooner

or later, the manufacturer and car dealer will understand that every car of a certain make, running and in service, is adding to or taking away from the reputation of that manufacturer and the sales possibilities of that dealer.

This business of distributing automobiles is a young business with a whole set of new problems for which there was no previous education or precedent. These problems have grown rapidly in volume and in complexity, so that only the effort of constant study on the part of those engaged in the business has made it possible to keep up with the requirements.

The problem of securing all possible information which would be of advantage to the car dealer in developing his business is a problem concerning all companies engaged in providing products for the car or in providing the vehicles themselves. It is not the dealer's problem alone. The manufacturer can be of great service to the dealer in working closer with him as to the best methods of meeting the problems that are constantly coming up, and the distributor can enhance the value of the dealers in his territory by operating in the same way.

New Problems Require Study

Problems are coming up all the time which have not required study previously, and these problems must be met. The intelligence of manufacturer, distributor and retailer can be centered upon them to the benefit of all concerned. There is a tendency in the business for the manufacturer to blame the retailer and the retailer to charge the manufacturer with failure to do the best possible thing under the circumstances. This position may assuage the feelings of the individuals concerned, but it does not advance the position nor does it solve the problems.

This is the largest industry in the country and the only large manufacturing industry where the contact of the manufacturer with the user is direct and specific. For this reason, the factory and those engaged in distributing are mutually concerned in the solution of all problems related to distribution, and they will be solved successfully only by the mutual consideration of them.

A New Idea of the Dealer's Position

We are still inclined to consider the car dealer as a separate individual or organization from the service station, the repair shop and the garage. This is fast becoming obsolete as a method of consideration. The car dealer representing a certain car in his locality and selling that car to the people of that locality has, by a logical extension of the market pressure, added facilities for service and repair of the car and the sale of accessories, some of which are required when the car is bought, but also required from time to time while the car is running.

The user of the car thinks of it as a car by name. He does not think of it as a collection of parts, such as axles, carbureter, transmission and wheels. His whole buying attitude toward the car is affected by this consideration. It is logical that the car dealer should be obliged to extend his activities beyond the sale of new cars to used cars, service and repair of cars, and the sale of supplies.

It is true that many types of special retailing or service have become all more or less important, and will continue to develop—special repair shops, electrical stations and special supply stores. The car dealer, however, should logically be a departmentalized dealer, conducting all the functions relating to the cars, whether these functions are sales or service.

A New Period in Automotive Field

The period of most rapid growth in the automotive field has passed. The period of intensive cultivation of the market is just beginning. The car dealer must be prepared to make less money on the unit of sale and more money by extending his efficiency of sale, seizing upon every outlet for the development of the best possible business. This means an analysis of sales possibilities in his area and of the conditions involved.

Suppose that in a given town there are in 1922, 200 trucks, 2,000 passenger cars, and an annual population increase of approximately 10 per cent, with a total population in the town of 10,000. The trucks in use should be divided into speed wagons, 1-ton, 2-ton, etc., so that the number in each classification is known. The cars should be divided into price classes, and into the makes of the most importance. These figures can be secured from the registration statistics. If the population increase is approximately 1,000 people per year, and the average use of cars is one for every five people, this would give a maximum increase of 200 cars for new market. If the average life of the car is five years, and there are 2,000 cars running, that would give the replacement market at a maximum of 400.

Classifying Car Registration

These would be in proportion to the price classes, and the numbers in each price class. For instance, if there were 1,000 Fords, then 200 would be a replacement market for the Fords, and 100 for new market. If a study is made of the buyers of the different types of cars, then the retailer can apply these statistics to his own business and analyze each possible customer in terms of his own sales contact.

Suppose this town is a market town or trading town with a surrounding farm area and in 1921 the business was 30 per cent below normal, with a crop price 40 per cent below normal. A study of the crop conditions from time to time

would indicate whether the market would be above normal, normal, or below normal, under the conditions of economic value.

How the Customer Reacts

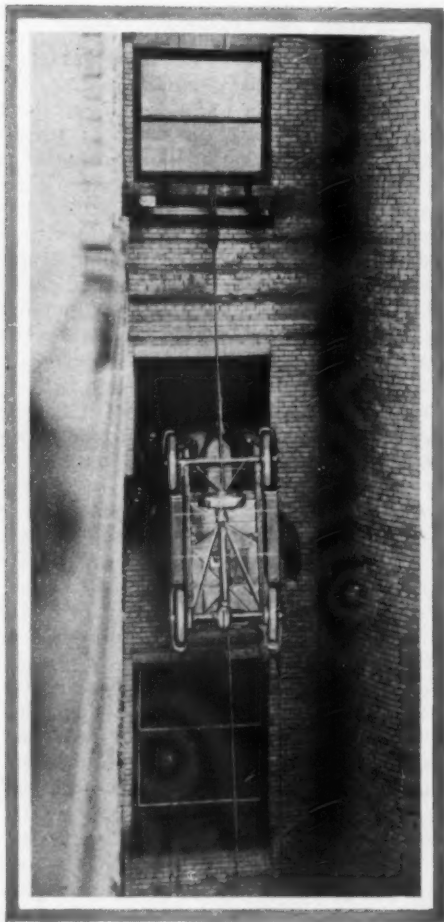
The reaction of the customer is largely built upon trifles. The car dealer who services and sells a car should represent complete authority on that car in the minds of the owners. This authority is secured partly by the good work done, and the fact that representations are never greater than the performance, partly by the care of all trifling details in which the customer figures, and partly by the application of all promotion work to the local conditions. These trifles are of such importance that it is necessary to emphasize them in connection with all retail work. The attitude of the telephone operator, the office boy and the mechanic in the service station all count if these people come in contact with the customer. All the operations of the business which establish contact with the customer can be made to add to the prestige and authority, or they will take away from it. Probably no part of the work requires such patient analysis as this, because it seems to be trifling and somewhat unimportant in many cases. While the circumstances seem trifling, the effects are so important that every circumstance must be considered as important where it relates to the customer.

The Future of the Industry

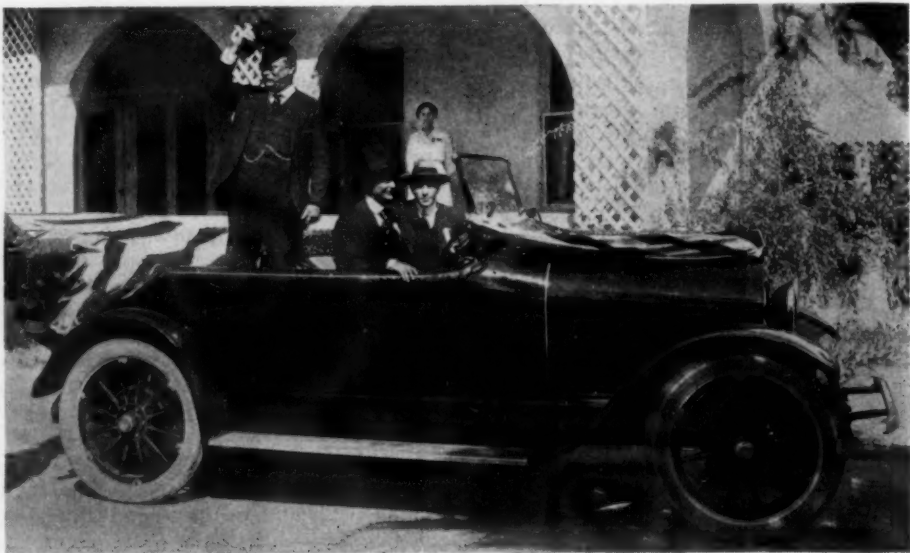
What are the future conditions? Registrations and production are growing. Each addition to this population adds to the necessity of service and repair and to the required effectiveness. The business of servicing the car will grow in the future faster than the business of sale or new production, so that service repairs and supplies will become increasingly important in the possibility of adding profit to the car dealer's business. This, of course, means a more carefully departmentalized establishment, with its details under adequate supervision, and intelligent understanding.

Profits will not come so easily, but the business is so big that profits will come very satisfactorily to the man who keeps up with the changes as they occur and is abreast of surrounding necessities. Already the automobile business is the largest industry in the country, and the number of cars running is so large that more families are interested in the automobile as a direct and special unit than in any other product. Your position, however, in your locality, will be determined not by the size of the business itself, but by the possibilities of sales in your territory, the knowledge you possess of conditions within the territory, and therefore the effectiveness of the methods adopted by you to secure your proportion of the market at least—if not a larger share than that particular percentage.

MOTOR AGE'S PICTURE PAGES



The Omaha, Nebraska, Chamber of Commerce wished to exhibit an automobile, the prize in a recent membership drive, in their rooms, but there was no elevator in the building big enough to admit it, so they hoisted it through a seventeenth floor window, as shown above



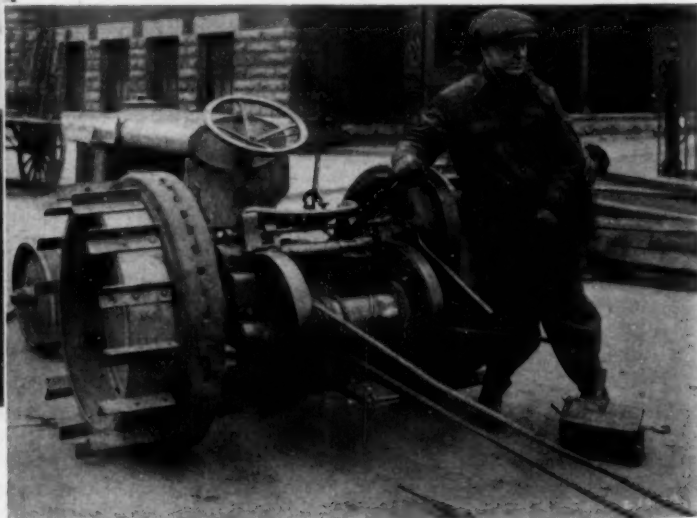
The Nash Motors Company is quite proud of the photograph reproduced here, of the late Colonel Roosevelt in a new Jeffrey Six, which he used when campaigning in Phoenix, Ariz.



One of the French taxis that were used so extensively by the French army, especially in connection with the battle of the Marne, has been placed in the museum in Paris as a war relic



One more of the thousands of operations that the tractor is taking over. Here it is the horse, the capstan and the whole works in general. How much more business-like and effective than the age-old device where a horse walks miles and miles of dizzy circles for each few feet of the building's progress?



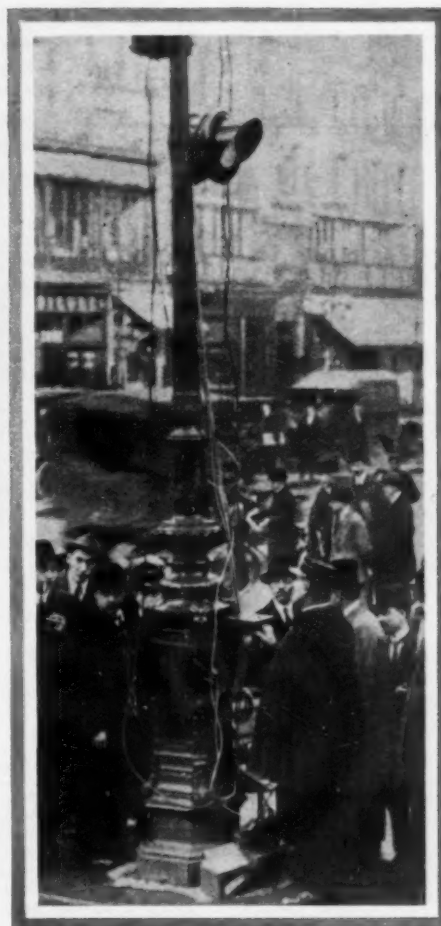
OF AUTOMOTIVE INTEREST



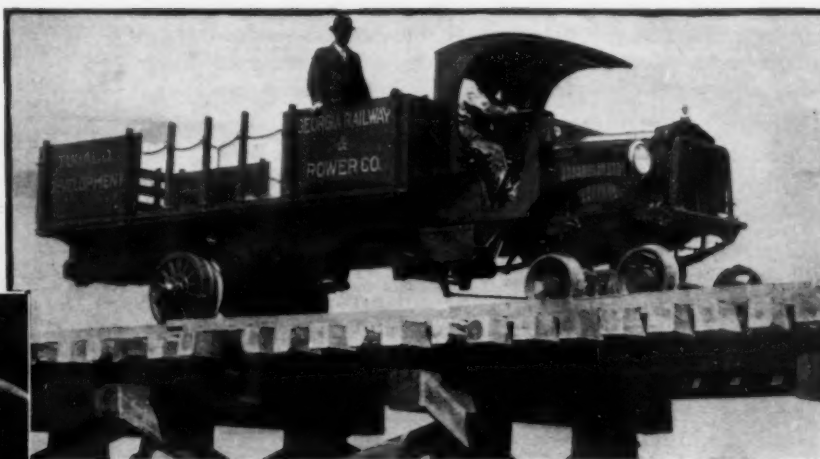
Recently the French aviator, Becheler, accomplished the first successful landing in a crowded Paris street. The landing was made in front of the Grand Palais and the aviator was immediately handed a summons by a gendarme



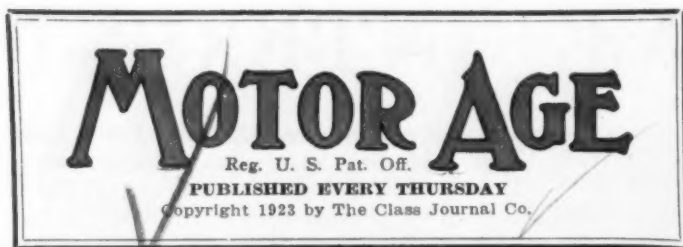
This Mack Limousine Bus makes regular hourly trips between Youngstown and Warren, Ohio. It is a good example of the rapid development in the handling of interurban traffic



Congested traffic is a problem in Paris as well as in this country. This electrically operated lamp, copied after the New York signals, was recently installed on a Paris boulevard



A Selden Unit 70 truck, with a four-wheel pony pivotal truck in place of the front wheels, serves as a locomotive hauling freight and passengers to the construction camp of the Tugalo River Dam, Georgia. The steering gear is employed to operate a brake rigging which acts on the front wheels



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Tire Good Sense

THERE is much evidence accumulating that after a while the customer who buys a tire is going to pay a more reasonable price for the merchandise that is delivered to him and less for the ideas some one has of organization. Several items that have come from tire manufacturers recently indicate a strong move toward economy of organization in these institutions.

In the past many tire organizations have put an almost prohibitive organization cost on their products so that all of the advantage of lesser production costs were lost, so far as the tire purchaser was concerned. This situation existed in several ways. There appeared to be a contest on the part of tire manufacturers as to which could organize the most branches. Even in some of the small western county seats there were handsome offices and display room where no tires were sold at retail and where the expense so incurred was greater than should have been the entire dealer overhead for all of the merchandise that went into the county, let alone only a wholesale overhead for one county. Now there are many fewer branches.

Other manufacturers apparently tried to see how many competing companies they could build up. They built separate factories and made competing lines in these factories to kill some inoffensive competitor—at least the competitor would have been inoffensive if no attention had been paid

to him. The larger companies are now calling their children home.

Some day pretty soon we predict fewer lines of tires but better tires for the money. The tire is much too necessary an article to carry so much useless overhead.

Know your prospects.

A Selling Show

THE Chicago show was featured by its selling, both to prospects and to dealers. This is not an especially notable feature of a show, for it has been the feature of many other shows, some of which were held this year. But there is a thought from the sales preparation of the Chicago show that might well be considered by automotive dealers generally, and perhaps by some factory officials.

When the committee having in charge the training of the Chicago salesmen for the show proposed a dinner similar to that held last year, they met with objections on the part of the salesmen. The salesmen said that they did not like dinners; that the dinners usually resulted in the guest eating more than was good for him, in smoking far too much, and sitting around in a close room until he was groggy, that he did not rest well that night and as a result was groggy and stupid the next day. The Chicago salesmen much preferred the plan of a meeting in Orchestra Hall, such as was held.

Some people may be inclined to think that salesmen are not worth consulting, as a rule, but in this case we are inclined to believe that the salesmen are one step ahead of some of their detractors. We believe that the salesmen, like the dealers, would be able to give much good advice to those higher up if they were consulted in a proper manner.

It has long been the usual factory plan to assume that all arrangements should be made for the dealer and that it was not necessary to consult him much, even about his own affairs. Probably a good many dealers have assumed the same attitude toward the salesmen.

We believe that factories, dealers and salesmen all have an intelligent view of their own affairs, all are loyal to their industry and ambitious, and if they would consult each other more freely and in the right way, all would be the gainers in the end.

Find out what the buyer wants to know and then tell it to him in your advertising.

The Dealer's Laboratory

WE sometimes blame the factory when things are not just right. We sometimes blame the engineer when things go wrong. We often fail to consider, however, the limitations under which a motor car plant may be operating. Production requirements may call for haste in putting a product on the market. Dealers must have cars or they cannot sell them, and they must sell cars to live. Moreover the real test of a car is the service it gives in the hands of the ultimate owner. Here results are obtained which would never be secured in any factory test, for it is seemingly impossible to foretell the treatment a car will receive at the hands of the owner and yet this is the place where it must make good.

Dealers have a wonderful opportunity to co-operate in making cars better for, at first hand, they have a chance to see what goes wrong and why. The problem of lubrication alone is one that requires the efforts of factory and dealer alike. To bring this point nearer home let us ask ourselves this question: "Did you ever see a garage in which a car was kept where there was not a pool of oil, water or gasoline or a mixture of the three on the floor under the car?" Casual observance of a show room floor where new cars only are seen will often show that even here a drip pan is placed on the floor because of the trouble of this nature.

There is no denying that oil is a slippery customer and hard to retain especially when it is hot and thin. This one point however illustrates that there is still room for improvement in our automotive vehicles. Service engineers have often developed methods of overcoming various difficulties because they have seen the actual conditions under which these troubles occur. The condition described does not vitally affect the operation of a motor car but illustrates that there is still possibility for progress in automobile development and the dealer and service engineer can probably do more in this direction than anyone else in the industry.



The dealer should remember that often the used car he is asked to bid for is a used up car.



Beware of Graft

THE automotive industry is going good and dealers are making money, so we have what seems to be the necessary accompaniment of prosperity—the grafter.

The legitimate associations within the industry are succeeding and are attracting considerable attention by their good work and as a result we have announcements and inquiries of various associations that have been organized for one man's profit. As a rule these organizations are merely devices for collecting names for sale to mail order advertisers. The name "protective" or something of that sort means nothing except the lure that it may have.

The greatest number of these fake organizations seek to enroll the car owner in the guise of lower insurance, cheaper parts or maintenance and in this way undermine the confidence of the owner in the dealer to whom he should go. MOTOR AGE believes that it is the duty of all dealers to warn their customers against other than legitimate motor owner clubs and to keep themselves informed as to the legitimate dealer organizations. It is more than passing strange that a legitimate dealer organization should have difficulty in getting information, when some fake institution can come along and get service without question.



Safety first, even when the traffic officer is absent.



Better Advertising

A FAULT to be found with some of the used car advertising is the too-often repeated line, "Our used cars are as good as new." This is not so and, while there are many ways of saying it, it means the same thing. A prospect reading this, continually, begins to wonder why new cars are built at all, and should he be interested to investigate some of the claims made, he will likely be a disappointed man.

True, many dealers offer new car guarantees on their

used cars but this does not give license to call them as good as new. Basing advertising, all advertising, on the truth is the foundation of its success. Fortunately, prospective used car buyers KNOW that no used car is as good as new and reading and re-reading some dealer's assertion that they are, tends to do but one thing—create in the customer's mind the impression that the dealer does not know what he is talking about.



The influence of the automobile is felt in every industry.



Just Like the Factory

MERRILL was in his shirt sleeves, moreover he was in the shop, where he didn't belong. His place was in the front office attending to sales, talking to customers, but here he was, in the shop where he was not supposed to be.

Mike, the foreman, gazed in wide-eyed astonishment. His domain was being invaded. His tottering throne was threatened; for here was Merrill out in the shop doing work that Mike should have been doing, wielding an acetylene torch with the hand of an expert. Mike scratched his head in doubt.

"Phatt be ye doin' to that pish uv stheel, and phatt's the idee uv a basin uv wather and the rag. And furthermore, if ye want my advish, phatt's the idee of havin' that flame so yellowlike," he exclaimed. "You'll never get anything hot that-a-way."

Merrill smiled and then said:

"Keep your eyes open, Mike, you might learn something yet. You're a good fellow, and if you'd ever forget that you know it all, there might be a chance for you. You never read anything in the automobile papers, so how do you ever expect to get any new ideas? I've got this acetylene flame adjusted this way on purpose. The oxygen is cut down so that there is an excess of acetylene. You may not know it, but this gives considerable heat, and at the same time puts a layer of carbon over this piece of steel. This gives the steel a different character on the outside; for when the carbon soaks in we can douse it with this rag and water and get a good hard surface."

Mike's eyes opened wider and wider, and finally he replied:

"I taut all youse knew how to do was offus wurruck, and shure how did yee ever git an idee of runnin' a shop?"

"This is an idea I got from a story on case hardening of flywheel teeth," Merrill answered. "In the factory where they do it they of course have a lot of machinery and make the job automatic."

"The flywheel on which the teeth are to be hardened is mounted on bearings so that it will turn easily and a little electric motor is arranged by means of gears and a pawl and ratchet arrangement to turn the flywheel slowly. Then an acetylene flame like the one I am using is allowed to play on one tooth at a time and when the flame has been in operation for seven seconds, the electric motor shifts the flywheel so that this tooth goes by a partition of sheet metal and gets into a stream of water. Perhaps you didn't notice that I have my watch hanging up there and I am timing this job so as to get it about right."

As the carbon soaked into the steel, the idea also soaked into the hazy brain of Mike, the foreman, and he turned away and went back to his little office at the rear of the shop to dig up an article he had intended reading a long time ago. He had thought he was too busy to read it. Now he knew he was too busy not to.

January Production Over 200,000

Best First Month in the History of the Industry

Early Reports Indicate Output of Motor Vehicles Will Exceed That of December by 9 Per Cent

CHICAGO, Feb. 2—Directors of the National Automobile Chamber of Commerce, at their monthly meeting held at the automobile show, were treated to a surprise when James S. Marvin, head of the traffic division, reported on the probable production for the month of January. Basing his estimate on shipping returns for the first three weeks of the year, Marvin told the directors that the figures for the month would show approximately 224,000 motor vehicles, the greatest January on record and exceeding December by 9 per cent. In this estimate, Ford was running high while the returns from the N.A.C.C. members show an increase of 125 per cent over January of last year. While January of last year exceeded December, 1921, still the latter month was an exceedingly poor one, whereas December, 1922, was surprisingly good, so this January's showing is all the more extraordinary.

The directors also were told there is a general improvement in the railroad situation. Bad order locomotives had dropped to 24 per cent on Jan. 1, while bad order cars are only 9½ per cent, whereas six months ago they were 15 per cent. Car shortage was down to 73,000 Jan. 15, which is 106,000 fewer than six months ago. Revenue car loadings are maintaining their record level and are more than 150,000 over three weeks ago.

The directors also decided to press the campaign to have the government remove the excise tax on automobiles and trucks and it looks as if some action would be had when Congress meets for its December session.

The insurance committee reported that at a meeting with the committee of underwriters it was reported that the new rate committee of the Automobile Underwriters' Conference has approved the principle of grouping automobiles for rate making purposes on records of experience with the various makes of cars. This means that instead of having a company submit a car for approval for the purpose of securing a rating, that the underwriters will rate it on the experiences of the previous year. For instance, if Buick turns out 50,000 cars in the previous year and there are only ten fires of internal origin, that the insurance people will give Buick a better rating than a car of similar type which has had forty fires of internal origin.

Gordon Lee, export manager of the

Yellow Cab Manufacturing Co., appeared before the directors and appealed for a definition of what is a taxicab? At present it is shut out of the passenger car show because it is used for commercial purposes, but Lee contends that it should be classed as a passenger car. The matter has been referred to the show committee.

Directors attending the meeting were Alvin Macauley, H. H. Rice, W. E. Metzger, H. M. Jewett, John N. Willys, J. J. Brosseau, Windsor T. White, J. Walter Drake, C. C. Hanch and C. W. Nash.

2000 Dealers Inquire About New Car in Three Months

CHICAGO, Feb. 3—More than 2000 letters from automobile dealers inquiring about the Dort six-cylinder car have been received by the Dort Motor Car Co. since the six-cylinder model was announced last November, according to Elijah G. Poxson, assistant sales manager of the company, who is here attending the automobile show. Poxson said there was a large attendance of Dort dealers at the show and that a considerable number of new ones were signed up.

ENGINEERS TO MEET SERVICE MEN

NEW YORK, Feb. 3—Arrangements have been perfected for a joint meeting of the automotive engineers and service men of the industry Thursday evening, Feb. 8, at the Automobile Club of America, under the auspices of the metropolitan section of the Society of Automotive Engineers and the Automotive Service Association. A subject proposed by the service men, "Does Factory Engineering Work and Practice Give Full Consideration to Service Station Problems?" will form the discussion.

B. B. Bachman, chief engineer of the Autocar Co. and formerly president of the S. A. E., will present the case for the engineers, while J. Willard Lord, local service manager of Harrolds Motor Car Co., will represent the service men. Lee J. Eastman, president of the Automobile Merchants Association of New York, will preside over the debate. A general invitation to the meeting has been extended to the local automobile trade.

HUNTINGTON DEALERS PLAN SHOW

HUNTINGTON, W. Va., Feb. 1—The first annual automobile show to be staged under the auspices of the Huntington Automobile Dealers' Association will be held March 6 to 10 in the Vanity Fair Building. G. B. Roberson, recently elected secretary of the association, was made secretary and general manager of the show. Every automobile dealer in the city will have an exhibit.

G. M. A. C. Has Financed Retail Sale of 274,775 Motor Vehicles

Total of Accommodation Extended Up to Dec. 31, 1922, Was \$337,600,000

NEW YORK, Feb. 3—In less than four years of operation, reports issued by the corporation show, the General Motors Acceptance Corp. has financed under its retail plan sales of 274,775 cars, trucks and tractors, and under its wholesale plant 165,782 cars, trucks and tractors, exclusive of other General Motors products and export shipments financed.

The acceptance corporation confines its financing to the products of the General Motors Corp., by which it is owned and controlled. While it is difficult to determine the extent of the part played by time sales in the sales and distribution operations of the automobile manufacturer, the figures of the Acceptance corporation give an idea of the importance of an institution of this character.

Up to Dec. 31, 1922, the reports show, financial accommodation of \$337,600,000 has been extended to dealers in General Motors products, classified as follows:

Year	Retail	Wholesale	Foreign
1919....	\$ 9,989,019	\$ 7,635,777	\$ 3,256,192
1920....	46,639,170	37,578,470	19,830,994
1921....	39,725,007	34,370,140	3,361,881
1922....	73,583,845	53,982,910	7,593,509

T'tals..\$169,991,041 \$133,567,297 \$34,042,576

Close to \$300,000,000 of its paper has been discounted and paid at maturity, and as of Dec. 31, last, it had outstanding obligations of approximately \$45,000,000. In order to accommodate the growing demands of the business, General Motors Corp. subscribed and paid in an additional \$1,000,000 of capital funds in December last.

The condensed balance sheet as of Dec. 31, 1922, indicates the Acceptance corporation has enhanced the strength of its position considerably in the past year. Total assets consisting practically entirely of cash and quick receivables are \$54,645,799. Capital, surplus and profits are \$6,309,256. Domestic obligations outstanding total \$43,517,619. Total reserves are \$872,958. Interest and charges received and held in deferred income accounts are \$1,117,984.

NEW CADILLAC PARTS POLICY

DETROIT, Feb. 1—Beginning Feb. 1 the Cadillac Motor Car Co. will establish the policy of selling genuine parts for Cadillac cars in every section of the United States at a fixed catalog price. The policy will eliminate practices under which owners were charged war tax, freight or handling charge, varying according to the section of the country in which the purchase was made.

Opposition Grows to Anti-Race Bill

\$1,751,521,408 Spent for Units Parts and Accessories in 1922

These Figures Announced at Chicago Conference of Advertising Managers of M. A. M. A.

Chicago, Feb. 3—A growing demand for automobiles more completely equipped was indicated by the opinions expressed at the conferences held here by the Advertising Managers' Council of the Motor and Accessory Manufacturers' Association. The major theme of the meeting was: "How can the parts and accessory manufacturers aid in developing the market for specialized and fully equipped cars and trucks?"

Ezra W. Clark, advertising manager of the Clark Equipment Co., of Buchanan, Mich., presided as chairman of the council. In his opening address he said the Motor and Accessory Manufacturers' Association estimates the volume of parts, units and accessories sold to car and truck manufacturers for original equipment in 1922 at \$982,952,384. Replacement business in parts and accessories, he said, was \$768,569,024, making a grand total of \$1,751,521,408.

Clyde Jennings, editor of *MOTOR AGE*, treated the conference theme from the standpoint of the automobile dealer.

"The automotive merchant today," he said, "is slowly realizing that he is a transportation merchant—that his sales, instead of being a completed article, are merely a means toward transportation, and that to round out this sale he must continue to sell this vehicle as long as it is being used for transportation. This means that he must supply maintenance—at a profit—for this means to the end and that it is his duty to sell others things that go toward making this vehicle a better means to the end.

"If this transportation merchant does his full duty toward his customer who buys transportation of him, he must have in stock for this man an ability to maintain his car, to make it more comfortable (if that is what the customer wants or needs) and especially must he provide for his customer the equipment that makes for safety and conformity with the laws of the community wherein this car is used. By the latter I mean that he must be sure that the lamps on this car are within the law, that he has the material and the ability to care for the brakes, and similar operations.

"So, from a dealer point of view, I should venture that the parts and equipment manufacturer could best devote his talents and money to advertising transportation with a view of helping the dealer sell the complete units of transportation in which these parts are offered to the public."

Edward S. Jordan, president of the Jordan Motor Car Co., said the determining factor in industry is merchandising. He believes that neither production nor engineering is the problem which must be considered most carefully in the future. He pointed out that many dealers failed last year.

L. B. Dudley, advertising manager of the Federal Motor Truck Co., Detroit, Mich., discussed the theme from the standpoint of the truck manufacturer.

William Mack, sales manager, Borg & Beck Co., stressed in his paper on the theme "In Relation to the Parts Manufacturer," the necessity of the parts manufacturer giving instruction to the dealers upon the proper care and servicing of the essential units of the automobile.

W. O. Rutherford, vice-president of B. F. Goodrich Rubber Co., made a brief address commending the advertising executives upon their own unselfish co-operative work in the interest of the automotive industry as a whole.

Cole Dealers Report Sales Activity From New Policy

CHICAGO, Feb. 1—Cole distributors dined at the Congress last night and reviewed the results of the new Cole policy, announced at the New York show, when the price was reduced materially and a decision reached to refuse trade-ins, and for each distributor to eliminate his used car department. The consensus of opinion at the dinner was that the move has been productive of great activity in sales and that the public's interest in the new policy was decidedly keen. Among those who spoke were C. A. Vane, general manager of the National Automobile Dealers' Association, and John Splane of the Martin V. Kelly Co.

1922's Studebaker Year Produced 110,269 Cars

CHICAGO, Feb. 3—One of the most largely attended dealer meetings of show week was the dinner given Thursday night at the Blackstone by the Studebaker Corp., for more than 500 of its dealers. The toastmaster was H. A. Biggs, vice-president, and addresses were made by H. P. Harper, general sales manager, and Dr. M. S. Rice of Detroit.

Biggs announced that Studebaker production in 1922 was 110,269 cars, as compared with 66,643 in 1921, 51,471 in 1920, 39,356 in 1919 and 23,864 in 1918. Dealers were told that every effort would be made this year to supply them with the types of cars they need when they need them.

Measure Aimed at Memorial Day Contest Loses Support

Indiana American Legion Backed Bill That Would Have Prevented Indianapolis Speedway Affair

INDIANAPOLIS, Feb. 5—The bill in the Indiana legislature to prohibit commercialized sports on Memorial day, the effect and purpose of which would be to prohibit the annual 500-mile speedway automobile race, now seems doomed to die in the House, where it is up for second reading.

Originally sponsored by the State American Legion, the bill was introduced in the Senate, where it passed with only a few votes against it. In the last two weeks opposition to the bill has been growing and nearly all the civic and business organizations have gone on record against it. At first only a few local posts of the American Legion were against the bill, but now nearly all are opposed to it, despite the great pressure of some Legion officials and the Legion's legislative committee.

The swing against the bill and its effect on members has been growing daily. Saturday a member of the House, who introduced a similar measure early in the session, came out against the bill and most of the representatives from in and around Indianapolis are opposed to it. Opposition of leading citizens and clubs has been aroused until now it appears that there is almost unanimous sentiment against it. The clubs are taking an active stand against the measure by resolutions, advertising in newspapers and other means. The cumulative effect of this effort has changed the situation in the last 10 days.

A statement issued by Representative Ralph Updike, who in the early days of the session was a strong proponent of the bill, sums up the situation. He said: "When I entered the fight to pass the Memorial Day bill I believed the people of Marion County and Indianapolis were almost solidly behind it, and I was convinced the American Legion of the State would give the bill undivided support. Since the bill has been considered, however, I have become convinced that the people of the State and Marion County feel that it would curtail their liberties."

Minority Floor Leader Gottschalk said: "About a week ago I thought the House members were about evenly divided. It doesn't look that way now. Forces of opposition are being augmented daily."

LINCOLN TAX CLAIM SETTLED

DETROIT, Feb. 2—Settlement of the United States Government claim against the Lincoln Motor Car Co. was made in the Federal Court here for \$1,500,000.

Greatest Tire Production in History Planned for Spring

All Factories in Akron District Taking Steps to Enlarge Their Outputs

AKRON, O., Feb. 5—Tire manufacturers in the Akron district are planning the biggest production spurt in the history of the industry.

With the spring demand for tires both from dealers and automobile manufacturers unprecedented, every tire factory within the next month or six weeks will go to a production ticket which will exceed the respective peaks of output reached in 1920.

The Miller Rubber Co., with not enough to fill standing orders for tires, will tax its plant to the limit and will climb to 8,500 tires a day—500 beyond the plant's normal daily capacity. The Firestone Tire & Rubber Co. is reported to be laying plans for a daily output of 30,000 tires—more than Firestone has ever before produced. Goodyear, it is understood, is also laying plans for a jump in output to anywhere between 35,000 and 40,000 casings a day, while the General Tire & Rubber Co. is rushing the work of installing machinery in its three new factory additions, so as to double present production of 2500 tires a day.

These production increases are announced in the face of the fact that nearly all manufacturers since last fall have been running their plants at steady gait, building up a reserve now estimated at more than 5,000,000 tires, so as to be prepared for the spring rush.

Conservatism—a costly lesson learned when the tire industry took its precipitate slump in the early summer of 1920—has again been thrown to the winds. Forgetful, apparently, of the fact that they all promised themselves and each other that never again would they be caught with such an unnecessary surplus of tires as was responsible largely for the fact that it took the industry two years to recover from its slump, manufacturers are steadily building up finished goods inventories and stocking their warehouses.

The price increases made effective early in January by practically all companies, instead of slowing up sales, apparently have materially stimulated sales. Dealers everywhere are ordering heavily for the spring and are showing unrestrained optimism as to the spring business.

EQUIPMENT CONVENTION DATE

CHICAGO, Feb. 5—Announcement is made by the executive committee of the National Association of Farm Equipment Manufacturers that the thirtieth annual convention of that organization will be held in Hotel Statler, Cleveland, Oct. 24-26, 1923.

FISK ENLARGES PRODUCTION

CHICOPEE FALLS, Mass., Feb. 3—Fisk Rubber Co., which has been producing at the rate of about 14,000 tires and as many tubes daily here for several months past, has opened the new year with expanding production. It is stated by the company that its orders now waiting to be filled are 78 per cent larger than those of a year ago. It is further stated that the company has sufficient raw materials on hand to meet all requirements up to July 1.

Tire Company Ordered to Desist From Unfair Methods

WASHINGTON, Feb. 5—The Federal Trade Commission on Feb. 2 issued a cease and desist order against the Amalgamated Tire Stores Corporation, of New York City, by which the concern must refrain from certain unfair methods of competition in the advertisement and sale of automobile tires.

The Amalgamated Tire Stores Corporation, the Commission found, bought tires from concerns which could not afford to hold their stock and therefore sold to the respondent at substantially reduced prices. A great portion of the tires so bought, it was found, are tires known to the trade and general public as "seconds" and in many instances were sold by the respondent as tires of first quality.

The order specifically prohibits the corporation from advertising or selling tires as being tires of "strictly first" or "absolutely first" quality unless such terms correctly and properly describe the tires so designated.

SYRACORD TIRE FORMED

SYRACUSE, N. Y., Feb. 1—Formation of the Syracord Tire & Rubber Co., Inc., to bid in the assets of the defunct Syracuse Rubber Co., has been completed by creditors of the bankrupt company. Federal Judge Frank C. Cooper has ordered a sale of the property Feb. 15, and at that time the new company will acquire the assets at a nominal cost and continue the operation of the plant here.

RICKENBACKER OFFERS PRIZE

CHICAGO, Feb. 1—Eddie V. Rickenbacker, vice-president of the Rickenbacker Motor Co. in America, flying ace in the world war, has offered a \$5,000 trophy to be awarded annually to the winner of a glider contest. Rules governing the contest, which must be held in America, are similar to those used in awarding the Pulitzer airplane trophies.

MOON MAKES NEW RECORD

ST. LOUIS, Feb. 5—Sales of the Moon Motor Car Co. in January came within 71 cars of equaling the total sales for the first four months of last year, according to an announcement made by the company. The factory is now building cars at the rate of 1250 a month and expects to increase this output after March 1 to 1500 a month.

Tall Figuring! To the Sun and Back 2000 Times on Goodyears

Akron Company Indulges in Statistical Spree in Celebration of Making 50,000,000th Tire

AKRON, O., Feb. 5—Demon statisticians wiped their tortoise shell rimmed spectacles, sharpened their pencils and did some tall figuring when the Goodyear Tire & Rubber Co., on Jan. 31, turned out the fifty millionth pneumatic automobile tire the company has made.

They figured that these 50,000,000 Goodyear tires would have a total mileage record of at least 375,000,000,000 miles—enough tire mileage to make more than 2000 round trips to the sun and more than 785,000 round trips to the moon.

They estimated that the rubber consumed in the manufacture of those 50,000,000 tires represented the yield for 100 years of 1,000,000 rubber trees, or the yield for one year of a billion rubber producing trees.

They figured that it would take 27,762 freight cars or a train of cars 210 miles long to ship at one time all the automobile tire Goodyear has made.

That the tires, if piled on top of each other, would mount into the air 3,155 miles.

That if laid tread to tread they would form a strip 23,630 miles long.

That they would equip all the automobiles made in the world during the last six years.

Goodyear factory whistles in Akron and at all subsidiary tire plants and subsidiary cotton mills were blown 50 times in celebration of the 50,000,000th tire.

Last June 8, or less than 8 months ago, Goodyear completed its 45,000,000th tire, which means that the company has produced more than 5,000,000 automobile tires in less than 8 months.

Hunting through old records of the company it is found that it took the Goodyear factories from 1898, when they were started, to 1912, or exactly 14 years, to turn out the first 1,000,000 tires.

Now Goodyear makes a million tires about every 45 days.

These figures do not include several million solid truck tires and pneumatic bicycle and motorcycle and carriage tires made by Goodyear.

Of the 50,000,000 Goodyear tires, the Akron factories have turned out 45,110,000. The California plant at Los Angeles has made 1,730,000, and the Canadian plant has turned out 3,160,000.

BIG TRUCK ORDERS START YEAR

CHICAGO, Feb. 2—Orders from fleet owners for trucks received in January by the Diamond T Motor Car Co. totaled 58, in groups of from four to 18, according to an announcement made today by C. A. Tilt, president of the company. Among the largest purchasers were packers and express companies.

Oakland Educational Film Shows Best Selling Methods

CHICAGO, Feb. 3—An educational film, which will be used for dealer meetings around the country, was shown by the Oakland Motor Car Co. at the annual dealers' dinner of the Chicago branch. The film, of five reels, tells in words and pictures the motor car's place in the business and social life of the country, illustrates the 1923 business outlook, shows the processes in the building of the Oakland car, and concludes with a sales feature. The latter takes the audience through the steps of selling the car from the time the prospect, a used car owner with an exaggerated idea of the car's value, first puts himself in touch with the sales staff after reading a dealer's Oakland newspaper advertisement.

Special stress is put on demonstration as the basis of making the new car sale and keeping down the used car allowance. Emphasis also is put on neatness and courtesy in the salesroom and on newspaper, billboard and mail advertising by the dealer. The picture was produced by the Atlas Educational Film Co.



"Close up" of Oakland phaeton, showing flexibility of the car

The speaking program was brief. L. J. Brooking, Chicago branch manager, was toastmaster. He introduced George H. Hannum, president and general man-

ager; C. J. Nephler, general sales manager, and representatives of the General Motors Acceptance Corp. Dealers were present from Illinois, Indiana and Iowa.

Dealers' Association of Kansas City Extends Scope

KANSAS CITY, Mo., Feb. 3—The membership scope of the Kansas City Motor Car Dealers' Association has been extended, to take in the dealers of Greater Kansas City. This expansion has been brought about through the work of the Used Car Committee of the association, which has been spreading its ideas in the surrounding community. A meeting of the Used Car Committee was held recently, at which practically all the dealers of Kansas City, Kan., and of Independence, Mo., were present. Four of the Kansas City, Kan., motor car dealers became members of the Motor Car Dealers' Association immediately, and others are expected to join soon. Ten dealers of Independence, Mo., have signified their desire to join. They became associate members, since in most cases the cars they handle are already represented by distributors.

WILLS REORGANIZATION DISCUSSED

DETROIT, Feb. 3—A meeting of representatives of creditors, bankers and stockholders of C. H. Wills & Co., was held this week, at which plans for reorganization of the company were discussed informally. It is expected that a basis for the reorganization has been established, which all persons at interest will find acceptable. Final decision will be made next week and following this an early termination of the receivership is hoped for.

Complete confidence was expressed by the conference in the future of the company under the reorganization. Difficul-

ties under which the company has labored since its organization will be removed, a spokesman for the committee said, and it will be enabled to market its product under favorable conditions.

The company has been meeting a good volume of business at shows in the past month, the spokesman said, and the popularity of its models has been fully borne out.

RAIL AND MOTOR MEN CONFER

NEW YORK, Feb. 2—Steps looking toward the coordination of rail, motor and water facilities, as a relief of the transportation problem, were taken at an informal meeting of the executives of the three branches held in the offices of the United States Chamber of Commerce of this city, on call of Julius H. Barnes.

The two-day conference, which was concluded Saturday, authorized the appointment of a general committee to make a survey of the problem and suggested the formation of a general committee to carry on research work.

MONTANA DEALERS ORGANIZE

BUTTE, Mont., Feb. 3—Automobile dealers from every section of the state organized the Montana State Automotive Trades Association at a meeting held in Butte Jan. 23 and 24. Fifty distributors and retailers attended the organization meeting which will be followed by another in Helena within a few weeks. By that time the association hopes to have a membership of 300.

Directors of the organization elected at the Butte meeting are: R. N. Hitchcock, Butte; H. O. Bell, Missoula; Fred M. Farrell, Lewistown; A. P. Heaney, Great Falls; H. S. Benson, Helena, and George D. King, Billings.

Overland Dealers Win Gold Watches in Sales Contest

CHICAGO, Feb. 1—The feature of the Overland dinner at the Congress last night, which was attended by more than 600 dealers, was the presentation of gold watches to the salesmen who participated in the national retail sales contest, which lasted throughout 1922. More than 8000 salesmen were in the contest and the leader was J. P. Haggot of the Overland Wisconsin Co. of Milwaukee, who had a record of having sold \$128,000 worth of Overlands at retail during the year. This same agency had seven salesmen in the first 100 in the contest. C. J. S. Phillips of Toledo was second to Haggot, only a few thousand dollars behind. L. R. Randall of the Dayton-Overland Co., Dayton, O., and L. D. Woodward of the Southern Tier Motor Co., of Elmira, N. Y., were third and fourth.

Haggot is 38 years of age and has been with the Milwaukee concern for the last year and a half, although he has been selling Overlands since 1912, having been with Gibson of Indianapolis and Simons of Detroit.

John N. Willys and Sales Manager Roy Peed were the speakers of the evening and enthused the big crowd with Overland optimism.

NEW ORLEANS DEALERS ELECT

NEW ORLEANS, La., Feb. 1—At the annual election of the New Orleans Automobile Dealers' Association, A. H. Borden succeeded W. P. Parkhouse as president; Gus D. Revol, succeeded A. R. Roberts, as vice-president, and E. D. Finley succeeded Fred Oster, as secretary.

February Production to Exceed That of January

Makers Are Increasing Schedules, Expecting Difficulties of Delivery in Spring

DETROIT, Feb. 3—Production in February will show a general increase over January schedules, releases to parts makers in this month running in excess of the January figures, and also indicating that factories are making additions to their stocks of materials in anticipation of increased difficulties in getting deliveries. The freight situation is bad, interfering alike with shipments and incoming freight. Western shipments are normal.

Except in the more prominent makes, dealers have been slow to stock cars for spring trade and this situation, coupled with the serious tie-ups at several railroad terminal points, is causing considerable anxiety. Dealers are already calling for cars which cannot be moved in adequate volume to destinations in the east and south. Until it is possible to drive cars away it is likely there will be shortages in certain makes in these sections.

Storage space at the plants and about the city is nearly filled with the excess of finished cars built in December and January and until these are shipped manufacturing will be somewhat below sales volume. There continues to be a heavier demand for enclosed cars than the supply, though manufacturers for the most part are now about caught up with this and except on scattering models are able to make prompt shipments.

Ford Motor Co. will build about 127,000 cars in February and reports orders from dealers approximating 150,000. The company declares these figures bear out its advertised statement, that there would be a shortage of cars in the spring. Until it completes the additions to its body and assembly plants in several sections of the country volume of production will not be much increased. Enclosed car business is running about 40 per cent of the gross.

Chevrolet is increasing its sales volume gradually and with the completion of its new plants soon will be in production of about 2000 cars daily. Shipments are now aggregating 1200 to 1500 cars daily, with a record single day in January of 2158. In the other low priced lines Gray is approximating 100 cars daily and Star at the Lansing plant of Durant Motors about 200.

Buick is continuing production at a rate approximating 700 daily and Dodge, 600 to 650; Studebaker, 500 to 550; Hudson-Essex, 250; Maxwell, Chalmers and Paige-Jewett, 200; Hupp, 125, and Oldsmobile is running at about the same figure; Oakland, 100; Dort, 50 to 75; Reo, 50 to 75 passenger and 50 speed wagons; Fickenbacker, 40; Durant, about 50 Durant fours; Columbia, 30 to 40, and Earl

Motors is operating at about the same rate.

In the high priced lines Cadillac is building at a volume closely approximating capacity and is gradually extending its production facilities. Output is running 100 to 125 daily, a large percentage of which is in enclosed cars. Packard is building 60 to 75 daily and will increase this as additional factory facilities are increased.

Thieves Get Tires By Fake Telephone Calls

PHILADELPHIA, Feb. 3—Thieves, by means of fake telephone calls, have been obtaining many tires from local garages, especially in the suburbs. They operate by telephoning a garage that a business firm in the district needs two or more tires and that a messenger will be sent for them. The name of an official of the business house, usually that of the purchasing agent, is used in making the telephone call. The "messenger" gets the tires and later, when the firm receives a bill, and protests, the trick is revealed. Some garages have lost more than \$100 apiece in this way.

PROPOSES TUNNEL FOR PARKING

BALTIMORE, Md., Feb. 3—An ambitious plan to relieve the automobile parking situation in the downtown section of Baltimore, a problem which has been of considerable worry, has been taken up by the City Council. A resolution has been passed by the First Branch calling upon the city engineers to report upon the feasibility of the construction of a tunnel under St. Paul street for a distance of five squares. It is said that there is but little chance of the prospect being carried out at present, however, because of the lack of funds for the work.

RECEIVER FOR DOUGLAS CORP.

OMAHA, Feb. 3—On application of ten stockholders, District Judge Day appointed Charles H. Johns receiver of the Douglas Motors Corp. and fixed the bond at \$35,000.

The corporation was organized in 1916 for the manufacture of trucks and tractors with a capital stock of \$1,000,000.

GALESBURG DEALERS ELECT

GALESBURG, Ill., Feb. 3—Officers of the Galesburg Automotive Dealers' Association have been elected as follows: President, E. T. Byram; vice-president, W. C. McCullough; secretary and treasurer, Lee W. Wright. It was decided to hold the annual show March 6 to 10 in the armory.

January Automobile Sales in Texas Better Than Year Ago

Improvement Is Widespread and Indications Are That It Will Continue Through February

DALLAS, Tex., Feb. 4—The actual retail sales of automobiles by Dallas dealers during the first month of the year were considerably greater than was expected. If there is any slowing up in business lines, the retail automobile dealers have not seen it here. The sales for January were about 10 per cent greater than for the same month of the previous year. The indications were, dealers said, that the automobile business would continue brisk through February. In March they expect a big trade as a result of the automobile show. April business, the retailers say, should be about normal, while things will probably slow up in May and June.

Houston retailers had a better business in January than they did for the same month of 1922. Waco dealers reported sales increased. Fort Worth retailers reported better trade, and Wichita Falls said the sales were holding up.

Accessory dealers experienced increased business because of fine weather and much traveling and use of cars. Tire men also reported increased business. Garage men said their trade was normal and truck salesmen said more trucks were being sold.

East Texas dealers were not reporting any increase in sales.

STANDARD PROMISES NEW CAR

PITTSBURGH, Pa., Feb. 5—A new four-cylinder car at an attractive price is promised by the reorganized Standard Motor Car Co. which takes over the old company of that name. The old company was a subsidiary of the Standard Steel Car Co., which has disposed of its entire automotive interest to the new corporation headed by Don C. McCord. The old company manufactured the Standard eight-cylinder car.

It is stated that in bringing out a new four-cylinder car the company will continue the eight. Promise is made that the new model will be in early production in both open and enclosed models.

CHEVROLET PORTLAND OFFICE

PORTLAND, Ore., Feb. 2—The Chevrolet Motor Co. has opened a new zone, to be known as Zone No. 19, to handle the territory of Oregon, Washington, Idaho and western Montana, with Portland as the headquarters. F. N. Coats, general western sales manager with headquarters in Oakland, was in Portland and completed the arrangements. W. J. Richmond, formerly territory man for the Chevrolet in this district and more lately assistant to Coats at Oakland, has been named zone manager. The Chevrolet building, erected specially for the company two years ago last fall, will be headquarters.

Hupp Dealers Get Tips on How To Sell 40,000 Cars This Year

Competition to Be Keener Than Ever Before, Says Sales Manager Hutchinson

CHICAGO, Feb. 3.—At the Hupmobile dealers' meeting here this week figures were presented showing the sale of Hupmobiles as gaged by shipments from the factory, by months for the last four years. These figures showed a total of 34,168 cars sold in 1922, as compared with 13,623 in 1921, 19,225 in 1920 and 17,442 in 1919.

The schedule for 1923, which has been previously announced, is 40,000. At this meeting O. C. Hutchinson, general sales manager, stated that distributors and dealers have asked for 43,000 cars in 1923, but he said the present factory capacity will not permit the production of more than 40,000. He advised dealers to build up and maintain their sales organizations at the highest efficiency because he expected competition to be keener this year than ever before. He gave them some sound selling advice.

President Charles D. Hastings made a brief talk, telling the dealers that the Hup company proposes to maintain its high standard of quality and assuring them that general business conditions are favorable for the best sales year in the company's history. He said the only disturbing factors are the labor situation and the railroad problem. Expert factory labor is getting scarce, he said, and the tendency is for higher wages, which necessarily will be reflected in the cost of building cars. Freight embargoes, he said, have resulted in a considerable damming of deliveries, especially in the east, and when the weather opens up he expects an extraordinary demand for freight cars.

Hupmobile factory sales by months for the last four years were as follows:

	1919	1920	1921	1922
January	681	1,581	407	1,633
February	1,247	2,088	627	1,761
March	1,366	2,331	1,312	3,005
April	1,542	1,229	1,275	3,806
May	1,491	1,825	1,514	3,662
June	1,466	2,002	1,753	3,822
July	1,330	2,213	1,907	3,571
August	2,010	2,770	1,502	3,383
September	2,000	2,081	684	3,289
October	2,018	561	643	3,438
November	2,007	436	1,204	1,843
December	1,284	608	805	955

President Hastings said that in January, this year, the shipments from the factory were 3,474. Sales have made a remarkable start for the year, he said, 102 cars having been sold at the Cleveland show, 88 at the Detroit show and 60 in the first four days of the Chicago show.



Charles D. Hastings

FINANCE ASSOCIATION REPORT

CHICAGO, Feb. 2.—Results from the announcement of a set of principles for the standardization of practices in the financing of retail automobile sales have been highly gratifying, according to C. L. Wolf, secretary of the Central Auto Finance Association, the organization which promulgated the principles.

Wolf said that dealers generally have cooperated willingly in maintaining the standards set up for the guidance and protection of both the dealer and the financing company. He said the principle against the financing of used cars more than four years old had proved of great advantage, and that as general rule the class of time payment paper offered by dealers has shown considerable improvement.

A. S. A. REDUCES DUES

BROOKLYN, Feb. 1.—The Automotive Service Association of Brooklyn at its January meeting reduced proprietary membership dues from \$50 to \$10. A drive will be undertaken to secure more members in this class which is a firm membership with the privilege of displaying the A. S. A. membership emblem in various ways. The income from this source of membership will be used in a newspaper advertising campaign to educate car owners to better service and particularly to patronize member shops which will be rigidly held to standards of efficiency.

SPRINGFIELD, O., SHOW FEB. 19

SPRINGFIELD, O., Feb. 3.—Sixty cars will be exhibited at the automobile show which will be given in Memorial Hall during the week of Feb. 19. All of the members of the Springfield Auto Dealers' Association signed up to exhibit at the show. Fred Moyer, of the Ford agency, is chairman of the dealers' exhibit committee. Beginning next week the association will hold regular weekly meetings in the new home of the Chamber of Commerce when details regarding the show will be worked out.

RUGGLES EXHIBIT AT CHICAGO

CHICAGO, Jan. 31.—An exhibit of Ruggles motor trucks was shown at Hotel Sherman during the Chicago show and dealers attending the show were especially invited to see it and discuss sales possibilities.

Prize Offered for Most Courteous Traffic Cop

SPRINGFIELD, O., Feb. 3.—The Springfield Automobile Club is offering a prize in money to the traffic officer who is voted the most courteous one. It is the idea of Secretary Brydon, who hopes it will teach the pedestrian as well as the motorist to watch the traffic officers for signals and tend greatly to reduce accidents.

Sustained Buying Interest Forecast for Early Months

Results at Shows Held Thus Far Exceed Most Optimistic Expectations for 1923

NEW YORK, Feb. 5.—January established a new record in the production history of the industry for that month and also showed a substantial increase over December in the number of cars and trucks produced. This report is accompanied by encouraging advices that there is a general improvement in the rail situation, insuring better delivery of materials and finished products.

Automobile producing plants are entering February on schedules based on returns from centers where shows have been held thus far this year. At all of the shows there has been strong proof of a well sustained buying interest. Following the holding of the New York exhibit, a noticeable improvement in sales was apparent.

Optimistic reports received from dealers and distributors at the second big show of the season which closed at Chicago last Saturday point to the maintenance of sales at a high level for the early months of the year. This outlook does not pertain to any one section of the country and is shared by dealers in districts, such as the Northwest, where recovery from the business depression has been slow and where sales as a result have suffered a severe check.

Part Orders Received

Orders for parts are being received in good volume and extend over a period of three months. Indicative of the enviable position by this branch of the industry in 1922 is the estimate for the year's business which places total sales of parts, units and accessories to vehicle manufacturers at \$982,952,000. This with the value put on replacements of \$768,869,000, brings the aggregate business for the twelve months to the unprecedented figure of \$1,751,521,000, only \$35,000,000 less than the approximated wholesale value of cars and trucks produced in that period.

Better conditions prevail among truck manufacturers with schedules moving forward to meet the more active demand expected to come with the approach of spring. Concentration of manufacturing facilities is still being placed to a great extent on production of motor buses for which there is a steady and wholesome call throughout the country.

A stronger disposition is apparent among farmers to make more extensive purchases this spring and this will have a marked bearing on both truck and tractor output. Trucks have been finding their readiest market in industrial centers, but agricultural districts are looming up as an important factor in their consumption.

Anti-Knock Solution for All Gasoline in Two Years, Says Kettering—New Olds Model

Head of General Motors Research Corporation Pictures Great Era of Fuel Economy With Development of High Compression Engines

CHICAGO, Feb. 3—Two important announcements were made Wednesday night at the Oldsmobile dealers' dinner at the La Salle Hotel, at which more than 300 were present.

A. B. C. Hardy, president of the Olds Motor Works, announced that a new low priced car would be added to the Oldsmobile line, probable in less than a year, and C. F. Kettering, president of the General Motors Research Corp., announced that within two years the General Motors will be producing tetra ethyl lead, the anti-knock solution announced last summer, in sufficient quantity to immunize enough gasoline to supply all the filling stations in the United States.

The tetra ethyl lead solution is designed to prevent detonation or knocking in gasoline engines, even when a very high compression ratio is used. Kettering said its use would permit the designing of engines of sufficiently high compression to double or even probably quadruple the average mileage now obtained from a gallon of gasoline. He said the solution is now being added to 150 gallons of gasoline dispensed daily from one filling station in Dayton, O.

Production plans of the General Motors, Kettering said, now call for an output of the solution by July 1 sufficient to immunize 150,000 gallons of gasoline a day and that every 30 days thereafter the volume would be increased suffi-

ciently to take care of another 150,000 gallons a day.

Hardy did not give details of the new Oldsmobile model. He said it would be a popular car, designed to attract a great many persons to the Oldsmobile retail stores. The present Oldsmobile models will be continued, he said.

Hardy and other officials of the Olds company spoke of the ambition of the company to attain third place among all companies in the production of automobiles. Policies are being directed toward that end, Hardy said.

On the used car question Hardy gave the same advice that he gave the Oldsmobile dealers in New York: "From now on you dealers are in the business of buying and selling used cars," he said. "Your success will not depend upon any so-called solution or combination of dealers, but upon the application by each of you of sound business principles in buying and selling. If there is a dealer in your community who is making too high allowances on used cars, you and the other honest dealers ought to send him all the trades that you cannot make. If you will just help him along that way to make the high trades, his banker will help you to put him out of business and it won't take very long."

Guy H. Peasley, general sales manager of the Olds company, presided as toastmaster.

C. B. Voorhis Resigns as Vice President of Nash Motors Co.

CHICAGO, Feb. 1—C. B. Voorhis is retiring from active connection with the automobile industry, in which he has been a prominent figure for many years, the announcement being made jointly today by President C. W. Nash and Voorhis that the latter has resigned as vice-president and director of sales of the Nash Motors Co. Earl H. McCarty, who was brought into the organization a year ago, from Studebaker, where he was assistant to H. A. Biggs, will take over the direction of sales.

A year ago Voorhis found that his personal affairs were demanding so much time that he wanted to retire then, but President Nash induced him to retain direction of sales for another year. So McCarty was brought in, and since



C. B. Voorhis

then has been studying carefully the Voorhis system, which has brought so much business to the house of Nash.

Voorhis will retain his residence in Kenosha and he will continue to be substantially interested in Nash Motors and also in a number of Nash distributing organizations, though the major share of his activities will be engaged by interests outside of the industry.

It will be remembered that Voorhis' connection with Nash dates back to General Motors days, when Nash was head of General Motors and Voorhis general sales manager of the Oakland Motor Car Co. When Nash took over the old Jeffery plant and changed the name to Nash Motors, Voorhis was one of the first executives selected for the Kenosha enterprise.

NEW YORK TIRE MEN ELECT

NEW YORK, Jan. 22—At the annual meeting of the Greater New York Tire Dealers' Association, the following officers were elected: President, Walter E. Layman; secretary, R. H. Johnston; treasurer, John F. Boh; directors, George D. Brown, George J. Burger, Arthur W. Delaney, H. J. Dorman, O. Goldberger, D. T. Morris, W. C. Reynolds.

To Protest Against British Rubber Restriction Laws

Manufacturers Here Appoint Committee to Enter Plea Against High Price Incentive

CHICAGO, Feb. 1—A committee to formulate a protest against the British rubber restriction act, to which the rapid and marked advance in the price of crude rubber is largely attributed, was appointed by the Midwest Rubber Manufacturers' Assn. in its annual meeting here. Thomas Follen, president of the Lion Tire & Rubber Corp., LaFayette, Ind., is chairman of the committee, and the other members are Sidney J. Roy of the Hannibal Tire & Rubber Co., Hannibal, Mo., and N. B. Brown, consulting engineer, Cleveland.

The form of the protest was left to the discretion of the committee, members of which said no definite action would be taken until they consult with members of Congress to learn whether or not the Government would be in a position to make representations to Great Britain.

Election of officers resulted in the reelection of President W. W. Wuchter, head of the Nebraska Tire & Rubber Co., and of Thomas Follen as vice-president. The office of treasurer was left open, to be filled at the next monthly meeting, which will be held March 13 in Cleveland.

Wuchter said it was the opinion of the Midwest tire makers that the British tax was a great injustice to American automobile owners and that they had no illusions about the possibility of reaching an agreement with a committee representing the British rubber growers. Wuchter said the high cost of crude rubber and other materials entering into tires has created a perilous condition for the small tire makers, but that by the practice of the greatest economy and efficiency in production and selling methods and concentrating on quality of product, most of them are maintaining a fair position and hoping for better conditions. The annual banquet of the association was held last night. There was a large attendance at the banquet and the business sessions.

TIRE DEALERS ORGANIZE

SPRINGFIELD, Ill., Feb. 3 — The Springfield Association of Tire Dealers has been organized with a dozen leading dealers in the membership roll. J. B. Cassidy was chosen president; E. C. Whittaker, secretary, and Phil Stewart, treasurer.

REPLACEMENTS NEEDED HERE

PHILADELPHIA, Feb. 2—When the Starr Garage, 1310-1318 North Fifth Street, was destroyed by fire, at a loss of \$275,000, 190 motor vehicles were burned, including 40 new touring cars and six \$5,000 trucks.

Concentration on Models in New Franklin Selling Plan

**Dealers to Be Asked to Take Particular Types at Certain Seasons
—To Meet All Demands**

CHICAGO, Feb. 1—About 200 Franklin dealers assembled here yesterday for their annual meeting and dinner, at which General Manager S. E. Ackerman announced a change in merchandising plans. His statement that hereafter the cars would be produced in quantities sufficient to meet the requirements of dealers was greeted with applause.

In the merchandising of the cars, he said, dealers would be asked at certain seasons to take particular types of cars and concentrate their selling efforts on those types. In one month, for instance, the concentration would be on enclosed cars and in another month it might be on open cars. This, he said, would enable the factory to concentrate on certain types with an increase in efficiency and economy.

In connection with this announcement it was made known at the Franklin factory that hereafter the "group" method of manufacture will be used instead of the "lot" method. The company's announcement of the change explains the two methods as follows:

"In group manufacturing, all material used in making any particular assembly is delivered to that particular department in a raw state, with no operations having been performed. In lot manufacturing, parts progress through the various machine shops according to the department in which the machines required happen to be located. In group manufacturing, parts are issued in groups which bear a distinct relation to each other. The units which go to make up one major assembly, for instance, are all machined and assembled in one department, which turns out a finished unit from the material stock. This method of manufacture means, therefore, that the manufacture of any one unit, such as the carbureter, axle, or other part of the car, will be completed in a single department.

"Among the advantages claimed for the group method of manufacture are the following: It simplifies the clerical work entailed in issuing stock; it minimizes the amount of stock moving; it stimulates the flow of stock through intermediate operations; it eliminates delay in assemblies due to stock shortage; it centralizes the control of units in that assembly under one foreman; it localizes the storing of all necessary raw material for the assembly to be manufactured."

In another paragraph it is stated: "If there is a shortage of material for any one part which enters into an assembly which is being manufactured under the group plan, it is perfectly possible to receive this raw material into the plant and complete it for the assembly the

same day, a thing which is entirely impossible under the present method of manufacture, on account of the large number of moves which are necessary to process a part up to the point of assembly."

A sane view of the automotive industry from the banking angle was given at the Franklin meeting by C. R. Holden, vice-president of the Union Trust Co. of Chicago. He said he used to be one of those cranks who was alarmed at the vast amount of money being spent for automobiles, but he has changed his attitude. He now believes the automobile is the greatest incentive for thrift that there is, and that "every family should have a home for its protection and an automobile for its comfort."

Dealer Uses Trucks to Supply Free Fuel to Boston's Poor

BOSTON, Feb. 2—A few weeks ago C. S. Henshaw, Dodge Bros. distributor for Eastern Massachusetts, realizing that the fuel situation was serious, and poor people could not get coal, approached the railroad officials that he knew and asked them if they had any old ties that had been discarded, and which generally are burned beside the tracks. He was told some would be gathered. Recently he was notified that the Boston & Maine Railroad would bring in several car loads to East Cambridge if he would cart them away. He got busy with Packard and Mack officials, and with his own trucks sent the fleet over and they carted off several hundred ties. These were turned over to Mayor Curley of Boston, who ordered them taken to the Boston City Yards and set a gang of men sawing and splitting them. Then the wood was turned over to the Salvation Army and other charitable institutions for distribution among the poor.

Henshaw proposes to do this again, but on a larger scale by having more truck companies co-operate, and get the railroads to bring in several thousand ties rather than burn them wastefully alongside the tracks.

NEW ROCHESTER DEALER BUILDING

ROCHESTER, N. Y., Feb. 1—Rochester is in the throes of a building boom among the automobile dealers of the city. Seemingly, each one is striving to outdo the other in the building of new salesrooms. The Jensen-MacCollum firm, Durant representatives, have a new building nearly completed in Main Street east while the Chal-Max Motor Corporation has announced the purchase of several pieces of real estate at an estimated cost of \$100,000. A new salesroom and service station will be erected at an estimated cost of \$100,000 on this property. Through this purchase the firm has acquired about 180 feet frontage on Chestnut Street and extends back about 100 feet.

Sales Organization for Small Tire Manufacturers Completed

**Paul P. Parker Is at Head of Move
to Aid Makers to Dispose of
Their Output**

CHICAGO, Feb. 1—Announcement was made here today of the formation of the Rubber Manufacturers' Associated Sales, Inc., for the purpose of putting into operation a new selling plan for the products of the smaller tire and rubber manufacturers. At the head of the new organization is Paul P. Parker, formerly a tire manufacturer at Indianapolis. Offices will be in Chicago.

The idea of Parker's company is to take to the tire dealers in various territories full lists and specifications of the different brands and types of tires which may be obtained from the manufacturers represented. The sales organization is to be large enough to cover sufficient territory to dispose of the entire production of the various manufacturers not having an outlet through permanently established connections.

In a statement of the policies of the company Parker says:

"It is a recognized fact that as a general rule the small manufacturer today can hardly afford the sales organization and advertising facilities necessary to secure a wide distribution of his worthy products. A great many of the different manufacturers' tires are not directly competitive with each other, inasmuch as they differ in design, dimensions in sizes, quality, prices and fabric or cord construction. Such diversified lines can be advantageously associated together in sales.

"Some of the smaller manufacturers are now wisely concentrating their present sales efforts on home territory, that is, the city where their factory is located and the territory immediately surrounding. The automobile field has now become so thickly populated everywhere that a large portion of any production can be disposed of with least resistance near home."

In further explanation of his plan, Parker said selling costs would be reduced, enabling the dealer to buy more advantageously, and that the dealer's selection also would be enlarged.

CHEVROLET DEALERS MEET

PHILADELPHIA, Feb. 3—An elaborate banquet was held Friday night by the Chevrolet dealers of Philadelphia, at the Hotel Lorraine roof garden, including a vaudeville program. The event was in celebration of the good business of 1922 and to encourage all to exceed this record for 1923. Charles W. Hallar, president of the Quaker City Chevrolet Sales Co., and president, also, of the Chevrolet Dealers' Association of Philadelphia, with a committee, made the arrangements.

Dealer Interest in Chicago Show Above All Others, Say Makers

N. A. D. A. Factory Men Express Optimism Over Encouraging Retail Prospects

CHICAGO, Feb. 1.—Talks with factory representatives here attending the National Automobile Show indicated a keen interest on the part of successful merchants in other lines in the prospects of obtaining good automobile dealerships. Sales representatives of two makers of high grade cars said they had been surprised at the number of such inquiries.

Virtually all the sales representatives interviewed said the dealer interest in this show greatly surpasses that of last year and that many opportunities for new dealer contracts have been offered.

With the better established companies the selection of new dealers is being made carefully and not so much for the purpose of enlarging sales representation as for replacing weak dealers and strengthening the organization.

Some of the manufacturers are studying their territories very closely, with the idea of getting their distribution points better placed geographically. In some cases it has been found that a particular territory can be served better by moving a dealership from one town to another, and the factory men are taking steps at this show to make such changes.

Companies needing wider dealer representation say they are finding at this show an abundance of available connections and they, too, are watching carefully to get the best they can. A notable instance of this is the National Motors Corp., the merger which is bringing out a new line of six-cylinder cars. Vice-President T. C. Brandle, in charge of sales, has been extremely busy interviewing prospective dealers.

Sales departments invariably report wonderful progress in retail sales since the New York show. Some dealers who figured their January shipments would provide them with enough cars to stock the spring demand are selling all the cars they are getting and are beginning to wonder whether they will be able to get enough to meet their spring requirements.

Most of the dealer meetings and dinners were scheduled for Wednesday noon or night, among them being those of Franklin, Oldsmobile, Paige-Detroit, Cole and Durant. Hupp and Rickenbacker will have luncheons Thursday.

TO FINANCE USED CARS

NEW YORK, Feb. 2.—Harry W. Gaston, formerly president of the Lexington Corp., controlling the distribution of Lexington cars in New York, Philadelphia, Indianapolis and Chicago, has become president of the Gaston Corp., which has been organized for \$1,000,000 and which has offices in the Fisk build-

ing here and branches in Philadelphia and Boston. It is Gaston's plan to finance dealers handling used cars.

488 Used Cars Sold at Profit of \$2.94 Per Car

HOLYOKE, Mass., Feb. 5.—The Holyoke Automotive Dealers' Association has gone thoroughly into the matter of equitable charges for used cars, the Boston rate book being taken as the standard. As a result, the situation has been greatly improved. On the present basis, cars are moved rapidly at a scale that yields the dealer a small profit on each transaction. Complete reports are filed weekly by members with the secretary of the association.

Figures for 1922 show: Used cars sold, 488; allowances, \$190,956.29; cost of repairs, \$9649.22; total cost, \$200,605.51; average allowance per car, \$391.30; repairs per car, \$19.77; total cost per car, \$411.07; sold the 488 cars for \$202,040.43; average sale price per car, \$414.01; profit per car, \$2.94; total profit, \$1434.72. These figures include the transactions of eleven dealers.

DECATUR DEALERS ELECT

DECATUR, Ill., Feb. 3.—Although no lengthy discussion upon a spring show was indulged by members of the Decatur Automotive Assn. at the annual meeting this week, a committee has been appointed to report upon possible sites and if a building can be secured plans will be taken up. Officers were elected for the ensuing year: President, J. A. Hedrick; vice-presidents, J. E. Rattan, Dan Bopp; secretary, D. N. Hanson; treasurer, William Shellbarger.

TRUCK MEN ELECT OFFICERS

PHILADELPHIA, Feb. 2.—Annual election and "Truck Tire Night" of the Motor Truck Assn. of Philadelphia were attractions which brought out a heavy membership and guest attendance. The election resulted as follows: President, F. H. Williams; vice-president, W. A. Manwaring; treasurer, W. Ross Walton; secretary, W. Howard Metcalf.

WINTON SALES MANAGER RESIGNS

CLEVELAND, Feb. 1.—H. J. C. Miller, general sales manager of the Winton Co., with headquarters at the plant in Cleveland, has resigned that position, effective Feb. 1, and will take a brief vacation before definitely deciding upon future plans.

WILMINGTON SHOW TO OPEN

WILMINGTON, Del., Feb. 3.—The Wilmington Automobile Show for 1923 will open next Monday and will continue until Feb. 3. It will be held in the Auditorium at Eleventh and Madison streets, the largest hall in the city. All space has been engaged.

N. A. C. C. Advertising Men Discuss Problems At Meet

Dealer's Place In Advertising the Car Is Told By Factory Officials

CHICAGO, Feb. 1.—Two days talking on subjects nearest their hearts brought the advertising managers representing members of the National Automobile Chamber of Commerce much closer together than any previous session of this sort ever undertaken by the N. A. C. C. advertising committee of which E. S. Jordan is chairman. The meeting was held Monday and Tuesday at the University Club and was behind closed doors. The first day was given over to the passenger car subjects and on Tuesday truck problems were discussed.

Discussing the problem of "what proportion of local advertising is met by the distributor or dealer, the managers thought it should be a fifty-fifty proposition between factory and representative. Advertising in theater programs, catalogs and the like, was the dealer's own proposition, it was thought, while some declared the dealers also should stand the burden of direct by mail advertising.

"How can consumer media be tested," was asked and the vote was that it is almost impossible to test it, although its worth was realized. Co-operation was the answer to "How can the N. A. C. C. and factory advertising managers be mutually helpful?" O. C. Hutchinson spoke in place of Frederick Dickinson on export advertising but he did not go into the matter deeply because of not being familiar with Dickinson's views on the subject.

H. R. Hyman, advertising manager of Stutz, ably handled "The Place of Special Appeal in Car Advertising."

"Special appeals in car advertising have their value to be sure," said Hyman, "but special appeals do not serve to furnish sound foundation that permanence requires. They handicap rather than improve a business in the long run if they are indulged in at the sacrifice of a general appeal that establishes fundamental recognition and acceptance. However, again, the product itself must be taken into account; also the limitations imposed by its distribution."

The Tuesday's session on trucks also was a lively session, the feature of which was a discussion of advertising of commercial passenger vehicles by Gordon Lee, the new export manager for the Yellow Cab Manufacturing Co. Lee believes in selling transportation as a means of selling the vehicles. In the case of the taxicab or bus he favors advertising to interest the people in other lines of business as to the money to be made out of operating busses or taxis. He says there is room for a taxicab service in every town of 5,000 or over. He cited Biloxi, Miss., with its 10,000 inhabitants and twelve taxicabs as an example.

IN THE RETAIL FIELD

Park Automobile Co. of St. Louis, distributor of Peerless cars, has moved from 3916 Washington boulevard to a new salesroom and service station at 2223-33 Locust street.

Hudson Motor Car Co. has awarded its distribution contract for the state of Michigan to the Aaron DeRoy Motor Car Co., an organization formed by Aaron DeRoy, widely known as a distributor in the Pittsburgh district, and who is moving his Pittsburgh organization intact to Detroit to take over the Hudson-Essex line. In connection with the wholesale business, the company will conduct a retail establishment in Detroit, making eight Hudson retail dealers in the city.

Elmer Lamm & Co., Freeport, Ill., has taken over the Studebaker agency formerly held by E. L. Otto.

Brown Motor Co., Geneseo, Ill., occupied its fine new garage Feb. 1 and held a reception all day, concluding with a dance in the evening to celebrate the event. It has a floor space of 10,000 feet. The Brown company is representative in the Geneseo territory for the Dodge, Reo and Chevrolet.

George W. Ehrhart, for 14 years distributor of the Pierce-Arrow car in the Decatur, Ill., territory, has taken over the agency of the Hudson and Essex cars, also.

N. E. Beckett Motor Co., Inc., has been chartered at Brake's Branch, Va., for automobile business.

R. D. Henderson Motor Co. is a new concern at Charlotte, N. C., which will handle the Rickenbacker car.

Barnes-Surface Motor Corp. has been chartered at Christiansburg, Va., for general automobile business.

M. Y. Tate has bought the Stonewall garage at Rutherfordton, N. C. He will handle Studebaker cars and accessories.

New dealers appointed for the Rolls-Royce are the Lifsky-Chambers Co., Atlanta, Ga., and Burns Lyman Smith, Syracuse, N. Y.

Durant and Star salesmen in Berkshire county, Mass., attended a dinner at Hotel Wendell, Pittsfield, Jan. 22, at which G. P. Whitten of Boston and M. R. Avriell of Pittsburgh gave talks on salesmanship and presented the salient points of business and sport models to be put on the market this season.

The Semmes Motor Co., distributors of the Dodge line, have opened a new showroom at Fourteenth and Monroe streets, giving them three locations now in Washington, D. C.

Ernest Black, for several years sales manager of the Oldsmobile Sales Co., Washington, D. C., has been appointed general manager of the company. Eddie Bowman, a salesman for the company, will be the new salesmanager.

Benny Vernon, formerly with Emerson & Orme Co., Washington, D. C., agent of the Buick account, has joined the sales force of the Luttrell Chevrolet Co.

E. Mudd, formerly with the salesforce of the Oldsmobile Sales Co., Washington, D. C., has joined the salesforce of the Metropolitan Motor Co., distributors for the Paige-Jewett.

The Durant-Stevens Motors, Inc., has been formed by R. C. Durant, C. M. Stevens and A. L. Warmington, for the purpose of distributing the Durant line of cars in Oakland, Cal., where the place of incorporation and business of the new

firm is located. Warmington and Stevens have been affiliated with the Durant interests for years, the former as treasurer-comptroller of the Durant Motor Co. of California, and Stevens as vice-president and salesmanager of the Oakland Durant factory.

G. A. Urquhart, for the past ten years manager of the San Francisco branch of the White Co. of Cleveland, has been appointed vice-president of that corporation. He will continue in charge of the Pacific coast district for the White, with headquarters in San Francisco. The allotment of White trucks—which have been Urquhart's special hobby—for the coast for 1923 is 50 per cent greater than last year.

Harvey H. Toy, of San Francisco, recently appointed head of the California State Highway Commission by Governor F. W. Richardson, has resigned as western director of the Victory Highway Assn. Marshal Hale, of San Francisco, will succeed Toy in the Victory organization.

C. W. Hobson, one of the best known automobile men in San Francisco, has been appointed service manager of the Chandler-Cleveland Motor Car Co. of this city.

Harry Wolverton, who has been connected with the W. J. Benson Co., San Francisco distributor of Stephens cars, has been appointed salesmanager of the San Francisco establishment of this company.

William J. Richardson, vice-president of the Chester N. Weaver Co., Studebaker distributors for San Francisco, is home from a visit to the factories of the Studebaker Corp. in Detroit and South Bend, where he went in an effort to speed up Pacific coast deliveries.

C. E. Hathaway, president of the Hathaway Motor Co., Kansas City, Mo., distributor of Durant, Star and Stutz cars, announced Jan. 30 the sale of the Durant and Star agencies to the Durant Motors, Inc., of New York. The Durant company is making a factory branch of the Kansas City agency, where the Durant, Star, Flint Six and Locomobile will be handled for ten states, and retail sales in Kansas City. The Durant location is Eighteenth and McGee streets.

John T. Harper has projected a two story automobile sales and maintenance establishment, to be erected in Great Barrington, Mass., in the near future.

The Superior Motor Co. of Provo, Utah, has lined up with the Paige and Jewett cars, according to Manager S. Pierpont of the Superior firm.

Dale and Frank Pingree, Ogden, Utah, have opened up at 2354 Hudson avenue. They will sell Chandler and Cleveland cars.

The Reid-Stith Motor Co., Kansas City, Mo., has been organized by R. W. Reid and M. L. Stith, for distributing Packard cars. The Kansas City distribution has heretofore been by factory branch.

The A. B. D. Motor Co., Kansas City, Mo., discontinuing the Cleveland Six, had some of the cars left on its hands, and in advertising these cars for sale took occasion to inform the public that the Cleveland was still represented in Kansas City, "and by one of Kansas City's oldest and best known automobile dealers." The new Cleveland dealer, the Moriarity Motor Co., was advertising also—but the incident of a dealer passing this compliment to his successor in representation was unusual. The A. B. D. Co., with larger Chandler territory, is concentrating on the Chandler.

100,000 Attendance and 500 Sales at Cleveland Show

Large Crowds With Money Furnish Prosperous Setting for Record Exhibit

CLEVELAND, Feb. 3—A check of the dealers in the various cars that were shown at the automobile show, which ended here Jan. 27, after a week that established new attendance records, disclosed that approximately 500 cars were sold.

It is the best record, from the standpoint of sales, that ever attended an automobile show in this city.

The official attendance records ran in excess of 100,000—the largest that ever viewed an exhibit of automobiles in this city.

The exhibit this year was the best organized and best conducted of the shows that have been held here. Herbert Buckman, manager of the Cleveland Automobile Dealers and Manufacturers Association, which conducted the show, is given a large share of the credit for the excellent record.

Not only from the standpoint of attendance and sales was the show a record breaker, but in the number of prospects. It is impossible to give an accurate figure, but dealers assert they have more prospects on their books than they ever had at this season of the year. Everything that happened at the show was in line and seemed to bear out the predictions previously offered that 1923 is to be an extraordinary one for the automobile industry in this city.

"This show indicates clearly that the Cleveland district is approaching a wave of prosperity that has never been equaled," said Buckman. "There was money in the crowds that visited the exhibits. They're going to buy cars as never before."

The exhibit of commercial cars in the armory, just across the street from the public auditorium where passenger cars were displayed, also was a success from standpoint of sales and attendance. Such an exhibit staged alone would not have had half the attendance that walked through the doors in the week of the co-exhibit of passenger and commercial motor vehicles.

SOUTHWEST DEALERS DAY

DALLAS, Tex., Feb. 3—The Dallas Automobile Trades Association has set aside Friday, Feb. 16, one of the closing days of its annual spring automobile show, as "Southwest Dealers Day." Invitations have been sent out to every dealer in the southwest to visit the show on that day. Ray Sherman, merchandising director of the Automotive Equipment Association, will address the dealers of the southwest at a banquet which closes the entertainment. Several factory representatives will deliver addresses, it was said.

Merchandising Film Viewed By Paige Dealers at Dinner

CHICAGO, Feb. 3—More than 400 Paige distributors and dealers attended the annual Chicago dinner of the Paige Motor Car Co. at the Blackstone Hotel. Henry Crone, sales manager, acted as toastmaster, and the only address was delivered by Harry M. Jewett, president of the company, who outlined its merchandising policies and painted a bright picture of the 1923 business outlook.

The new Paige merchandising film showing the steps in the sale of Jewett cars made a distinct hit with the audience. It showed the proper methods of approach to a prospect, gave details of territorial canvassing, owner follow-up and new and well planned demonstration of the car. The film will go the rounds

of dealer meetings throughout the country.

This was the largest Paige dealers' dinner ever held in the Chicago territory. Distributors from most of the middle western states sat at the speaker's table with the officers of the company.

READING STANDARD CO. SOLD

READING, Pa., Feb. 3—Representatives of firms in Philadelphia and other cities were present at the receivers' sale of the real estate, motorcycle parts, equipment and supplies of the Reading Standard Co., which was conducted by A. E. McGavin, receiver, of this city. The American Bosch Magneto Corp. bought the factory for \$30,000 and a like sum was paid by the Cleveland Motorcycle Co. for the equipment on hand.

CONCERNING MEN YOU KNOW

Fred W. Alkire, president and treasurer of the Alkire-Smith Automobile Co., Chevrolet distributors at Salt Lake City, went to Ogden a few days ago and was married.

Ralph E. Espy has purchased the interests of H. W. Norton of the Burgess-Norton Mfg. Co. of Geneva, Ill., manufacturers of B-N Piston Pins and Bur-Nor All Steel Hatchets. The annual election of board of directors resulted as follows: C. M. Burgess, president and treasurer; R. E. Espy, secretary; F. E. Burgess, assistant treasurer. Espy comes to the Burgess-Norton organization from the U. S. Mfg. Co. of Decatur, where he was general manager. Previous to that he had for a number of years been with Butler Bros. of Chicago as a department executive.

Arthur M. Laycock has been appointed to represent the Waukesha Motor Co. in the east, with headquarters at 110 W. 42nd street, New York. Laycock was formerly identified with the England Dangler and London General Omnibus Co. and served as general manager of the Fifth Avenue Coach Co. during the war. He was chief engineer of the Sheldon Axle & Spring Co. for eleven years. In the development of its new engine the company has developed a system of unit coordination, which, it is claimed, will make great economies possible.

James A. Baker has been elected sales manager of the Connecticut Telephone & Electric Co. of Meriden, Conn., succeeding C. E. Stahl, who held this position for the last eight years. B. C. Rogers succeeded E. C. Anderson as sales promotion and advertising manager. Rogers has been associated with the company for the last 15 years.

J. E. Duffield has retired from the Whyte Duffield Motor control and has become identified

with the Winterhoff Tool & Machine Co. of Elkhart, Ind., manufacturer of the Gasalarm, an electrically operated gasoline gauge which is attached to the dash. Duffield is distributor for the company, with his headquarters at 215 Forrest avenue, Oak Park, Ill.

Carroll Downes, president of Star, Inc., and a prominent executive of Durant Motors, came to the Chicago show suffering from a severe cold which became worse after he had reached Chicago, the result being that Downes was confined to his room.

The appointment of C. Roy Clough to succeed H. C. J. Miller, resigned, as sales manager of the Winton Co. is a show week announcement.

F. E. Edwards, formerly chairman of the technical committee of the contest board of the American Automobile Assn., has attached himself to the staff of the Cole Motor Car Co. of Indianapolis and will be traveling representative for that concern in middle west states. Edwards has been connected with the industry for 20 years, having been particularly prominent as an official at national races and tests, serving in most cases as chairman of the technical committee.

C. M. Ballard has been appointed sales promoter for the Autocape Top Co., Chicago. Ballard has previously held this position twice before for this company. The Autocape Top Co. is one of the oldest trim and paint shops in the central states.

Archie G. Anderson, formerly of the Fisk Rubber Co.'s plant in Chicopee Falls, Mass., has been appointed deputy collector of internal revenue, with duties at Springfield, Mass.

High Rubber Tax Controversy Reaches Official Washington

WASHINGTON, Feb. 3—As a result of a great deal of agitation being caused by automobile tire manufacturers, headed by Harvey S. Firestone, among government officials, a conference is expected here next week between government officials and representatives of crude rubber associations in British colonies, with regard to the policy of the colonies in maintaining high taxes on exports of rubber to the United States.

Firestone has presented to the Department of Commerce figures showing that Great Britain controls 85 per cent of the world's supply of crude rubber. American car users will soon be forced to pay 35 per cent more for rubber tires than they did December 1, 1922, because of the export tax placed on crude rubber by Great Britain and her colonies, figures placed before the Commerce Department show.

"With American manufacturers consuming 75 per cent of the rubber output of the British colonies, the increase in price in crude rubber, resulting from the export tax now levied by Great Britain, will cost American tire manufacturers \$200,000,000 in 1923," Firestone said.

READING SHOW CLOSES

READING, Pa., Feb. 3—The seventh annual automobile show of the Reading Auto Trade Association has closed after a successful run.

NEW REO STORAGE HOUSE

LANSING, Mich., Feb. 5—The storage and shipping building which the Reo Motor Car Co. will put up will cost about \$500,000 and have approximately 640,000 feet of floor space. The dimensions are 577 by 365 ft. and will include a train

shed which will accommodate seventy-two freight cars at a time. Railroads serving the property are Michigan Central and Grand Trunk. The building also will include the export shipping department where cars will be crated and prepared for export. Space for the storage of 3,000 cars will be afforded. The storage stock will be drawn upon in making shipments and kept replenished by the manufacturers of new cars. Storage up to the present has been largely outside of the plant. Under the plan, cars will be under cover at all times.

REORGANIZE WATSON TRUCK

SYRACUSE, N. Y., Feb. 3—Reorganization of the Watson Truck Corporation, which was formerly the Watson Products Co. of Canastota, has been completed with the election of Harry J. Clark of Syracuse as president. Clark has managed the concern during the receivership which has covered more than two years.

Plans for the extension of the new corporation are being worked out by the newly elected officers who are as follows: Vice-president, Herman Casler of Canastota; secretary, Charles R. Chapman of Syracuse; assistant secretary, Robert H. Imhofe of Canastota; assistant treasurer, J. M. Wood of Canastota.

NEW PROCESS GEAR EXTENSION

SYRACUSE, N. Y., Feb. 2—Extension of the plant of the New Process Gear Company recently acquired by the Durant interests, has been started. The North Franklin Street factory, it is officially announced, will be used for the manufacture of axles for the Durant and Star cars. The new plant will employ about 500 men, exclusive of the gear plant which will employ approximately 2000.

Old Timers Have Lively Rejuvenation at Chicago

Harry P. Branstetter Selected to Head Organization Whose Functions Are Social

CHICAGO, Feb. 2—The rejuvenated Old Timers Club, whose aims now are purely social, held its annual Chicago show dinner Thursday night at the Congress, the affair packing the gold room. No speeches were attempted, the entertainment being in the nature of a cabaret performance. All enjoyed this sort of an evening and these annual show dinners will be continued.

W. L. Hughson, president of the club, in retiring from office, read the report of the nominating committee, which was accepted, the following directors being elected: Harry P. Branstetter, Kissel Motor Co., Chicago; Albert Champion, president A. C. Spark Plug Co., Flint, Mich.; W. L. Hughson, president W. L. Hughson Co., San Francisco; Harry C. Stutz, president H.C.S. Motor Co., Indianapolis; Horace De Lissier, Ajax Tire & Rubber Co., New York; E. V. Rickenbacker, Rickenbacker Motor Co., Detroit; C. G. Sinsabaugh, Class Journal Co., New York; Gilbert U. Radoye, sales and advertising director Haynes Automobile Co., Kokomo, Ind.; Martin L. Pulcher, vice-president and general manager Federal Motor Truck Co., Detroit; Vincent Bendix, president Bendix Engineering Co., Chicago; William T. Morris, vice-president and general manager American Chain Co., Bridgeport, Conn.; Thomas Wetzel, Fisher Body Co., New York; Barney Oldfield, Oldfield Manufacturing Co., Los Angeles; James Levy, president James Levy Co., Chicago; Frank Edwards, Dodge Bros., Milwaukee; Eddie Bald, Hudson Motor Sales Co., Pittsburgh; Sid Black, sales manager Cleveland Automobile Co., Cleveland; Lloyd Maxwell, president Maxwell-McLaughlin Co., Chicago; Walter Bermingham, Chicago Evening Post.

It is planned to elect Branstetter president, Rickenbacker vice-president and Bendix secretary-treasurer.

ANSTED HEADS SALES COMPANY

NEW YORK, Feb. 1—The Lexington Motors Co. of New York, Inc., representing the Lexington in this territory, announces a change in the personnel of its officers through the election of Frank B. Ansted, president of the parent company, as president of the local concern. Coming into the New York company with Ansted is Ray Middleton, who resigns as sales manager of the Lexington company, manufacturer of the car, to become vice-president and general manager of the Manhattan organization. F. M. Tattman, formerly cashier of the Fayette Bank and Trust Co., of Connersville, Ind., becomes secretary and treasurer of the Lexington Motors Co. of New York.

BUSINESS NOTES

Perfection of the Asbestos Brake Lining Assn., an organization of the manufacturers located in various parts of the country, has been announced by S. S. Simpson, president of the Raybestos Co. of Bridgeport, who is also president of the newly formed body. The association has opened an office at 17 W. 42nd St., New York. Arnold A. Mowbray has been elected commissioner of the organization.

The Gorey Automotive Parts Co., New York City, recently has been awarded the representation of parts in the New England territory of the following units: Ross steering gear, Detroit gearsets, Russel and Torbenson axles. The distribution of these parts will be handled out of the Boston branch of the Gorey company, which for some time past has been the parts distributor of these same units and others in New York.

The Fisher Body Corp. has offered through a syndicate of bankers a new issue of \$20,000,000 six per cent serial gold notes at a price to yield five and a half per cent to six and a quarter per cent, according to maturity. These notes are dated Feb. 1, 1923, and mature \$2,500,000 annually on Feb. 1, 1923 to 1927, inclusive, and \$10,000,000 on Feb. 1, 1928. The proceeds will be used to retire outstanding funding debts and bank indebtedness and to retire the local outstanding preferred stock of the corporation, amounting to \$2,552,800, through providing additional working capital. In addition the company has arranged, subject to formal stockholders' authorization, to issue and sell an additional 100,000 shares of common stock at \$75 a share for new manufacturing facilities.

The Tire Protectors Co., Cleveland, O., has been chartered with a capital of \$10,000 to manufacture patented tire protectors. The place of business is at 2546 Prospect avenue.

The Dimit Co., Baltimore, Md., has put a dimming device on the market. It is said to enable the motorist to dim his headlights instantly without removal of his hands from the wheel.

Roamer Motor Car Co. has been granted approval by the Michigan Securities Commission to issue \$125,000 in preferred stock and 62,500 shares of no par stock at \$2 a share.

The Cord Tire Co. has reelected its old directors and has placed on the directorate John J. Mitchell of the Illinois Trust & Savings Bank, Chicago, and James B. Lambie, Washington banker. The board has authorized the erection of additional buildings, which will give the company a capacity of 3000 tires daily, compared with 650 at present. The plant is located in Chester, W. Va.

The International Harvester Co. has declared the regular quarterly dividend of \$1.75 a share on preferred stock, payable March 1 to stock of record Feb. 10.

Chester Auto Parts & Machine Co., manufacturer of axle shafts for replacement, has broken ground for a modern factory at Crumm, Lynne Station, Chester District, Pa. The new equipment will double the company's present production facilities.

Rickard and McGraw Promote New \$1,500,000 Speedway

RICHMOND, Va., Feb. 1—A new automobile race track, a rival of the famous speedway of Indianapolis, to be located at Glen Allen, Va., 15 miles north of this city, is the proposal of Tex Rickard, fight promoter, and John J. McGraw, baseball magnate, who have already secured the land for the building of the project.

According to the plans as now outlined, three big motor races a year will be staged in Richmond, under the auspices of the A. A. A. The New York interests have obtained an option on 835 acres of land in the immediate vicinity of Glen Allen, bordered on one side by the R., F. & P. railroad and approached directly by the Richmond-Washington highway.

The project would involve an estimated outlay of approximately \$1,500,000.

TRACTOR SALES INCREASE

CHICAGO, Feb. 3—A remarkable increase in the sale of tractors and other farm machinery will be shown by the annual report of the Advance-Rumely Co., in its annual report soon to be issued, according to Finley P. Mount, president of the company. The growth of the business in 1922 over 1921 amounts to 56 per cent in units, Mount said.

He attributed a large part of the increase to the results of tractor schools which the company has conducted in a number of the leading agricultural states. He predicted a slight advance in prices of agricultural implements.

LINCOLN OUTPUT 5242

DETROIT, Feb. 2—Lincoln Motor Car Co., concluding its first year of control as a Ford Motor Co. division, reports a total output of 5242 cars, an average of

473 monthly, during the eleven months of Ford operation. In January, while the plant was under operation by the receiver, shipments were 39, this increasing in February to 156 and reaching a peak of 733 in June.

The new Ford paper mill at River Rouge is now converting daily, four tons of old newspapers and rags into 10,000 automobile parts. The daily yield of waste paper produces three and three-quarter tons of cardboard used chiefly for panels and anti-rattle appliances.

YELLOW GETS ENGINE PLANT

EAST MOLINE, Ill., Feb. 2—H. A. Holder, president of the R. & V. Motor Co., and J. A. Ritchie, president of the recently organized Yellow Sleeve-Valve Engine Works, Inc., this week formally notified employees of the East Moline plant of the completion of negotiations by which the new interest takes immediate charge of the manufacture of engines for the Yellow busses and the R. & V. Knight cars. By this deal the new company purchases certain machinery for the manufacture of the Knight engine and secures floor space in the plant to carry on its work. Both companies have extensive plans for the coming year.

A. A. Gustafson, superintendent of the R. & V. Motor Co., becomes works manager for the Yellow company.

NEW CANADIAN FORD PLANT

TORONTO, Ont., Feb. 3—A contract was awarded by the Ford Motor Co. of Canada for erection of the first units of a \$1,000,000 assembling plant to be erected here. The immediate program calls for the construction of a one-story assembling building 500x400 ft. and power house 120x50 ft., at cost of \$400,000. The plant will be used for the assembly of cars marketed in Central Ontario district.

Ford Enclosed Car Business Increased 59 Per Cent in '22

Total Was 348,728 Cars, of Which 198,382 Were Coupes and 150,346 Were Sedans

DETROIT, Feb. 3—Sales of enclosed models by Ford Motor Co. in the United States and abroad totaled 348,728, as against 218,810 in 1921, or an increase of 59 per cent. If the demand for these models continues to grow in 1923 as it did in the year past, it is expected that approximately 500,000 will be built.

Number of coupes built in 1922 exceeded sedans, the figures being 198,382 coupes and 150,346 sedans. In 1921 there were more sedans than coupes, the figures in that year being 125,831 to 92,979. Thus the increase in coupe popularity was far ahead of the increased growth in business of both enclosed models, ranging over 100 per cent. Combined coupe production in 1921 and the two previous years was 205,401, about 7,000 more than for the single year 1922.

Plans of the Ford Motor Co. for expansion of manufacturing in 1923 have been dictated largely by anticipated increases in enclosed car business. The company is just beginning to get production on its new four-door sedan and this, in addition to the former enclosed car business, will make a large increase. The new plants at Chicago, Los Angeles and other points will be devoted largely to assembling enclosed bodies shipped knockdown from Ford plants at River Rouge and Iron Mountain.

Fourteen new dry kilns have been installed at Iron Mountain, and these, with former equipment, make possible the drying of 120,000 feet of green lumber every day. The Los Angeles plant, when additions are built, will compare in size with any plant west of Chicago. This plant, in addition to assembling all its own bodies, will also assemble coupe and sedan bodies for the San Francisco plant. Chicago will supply a group of plants in its section with enclosed bodies on the same plan.

COMPULSORY INSURANCE BILL

PHILADELPHIA, Feb. 1—Pennsylvania will take up the matter of compulsory automobile liability insurance, Senator Samuel Salus having introduced into the legislature a bill demanding that owners of motor vehicles be required to carry a \$3500 policy to protect those who are injured or whose property is damaged by automobiles.

SEEK UTILITIES RIGHTS

SACRAMENTO, Cal., Feb. 2—Motor carrier interests of this state have launched their fight before the forty-fifth session of the Legislature to have themselves classified as public utilities and taxed on a proportionate basis of income, in the same manner as the railroads and other common carriers.

The READERS' CLEARING HOUSE

Questions & Answers on Dealers' Problems

Replacement Pistons

Q—Express your opinion on the following: A 1916 Chalmers engine was rebored and aluminum or Lynite pistons replaced with heavy cast iron pistons weighing 36 ounces each. Do not know the weight of the original pistons, but have weighed the Kant-Skore and find they weigh only 14 ounces. Is not 36 ounces too heavy for this engine as the bore is only 3 1/4 inch?

Have had considerable trouble with engine knocking out connecting rod bearings and as appearances show that bearings have never run dry, would you consider that the cast iron pistons were too heavy, especially as this engine runs at very high speed and has small bearings? The owner of car cannot be made to believe that there is anything wrong with the cast iron pistons and is highly prejudiced against any light weight pistons, due to former experiences with the old-time Lynite pistons.—C. S. Tobin, Los Angeles, Cal.

The knocking out of the connecting rod bearings is due to one of two causes or to a combination of both. The first is a crankshaft that is sprung or connecting rods out of alignment, and the second is pistons too heavy.

The 1916 Chalmers engine was designed for a light weight piston and was equipped at the factory with an aluminum alloy piston of the solid type. It is reasonable to believe that the installation of pistons weighing more than double this weight will show rapid wear on the connecting rod bears, and probably the main bearings. However, even with 36-ounce pistons the bearings should not pound out without warning. It would seem that the heavy pistons would cause a gradual wearing of the bearing bushings, which would manifest itself before the bearings have a chance to completely pound out. This leads us to believe that the crankshaft is sprung and we would advise that you remove the crankshaft and test it as outlined in an article printed in MOTOR AGE November 7, 1922, entitled "How Should Bearings Be Fitted?"

The Chalmers company is using aluminum alloy pistons in their engines at the present time and we have been informed that they do not supply cast iron pistons. If the owner objects to the use of aluminum alloy pistons, you might advise any of the popularly known replacement type of light weight cast iron pistons, which are used in great quantities by regrinding concerns throughout the country. A high grade replacement cast iron piston will weight considerably less than 36 ounces, and you should be able to convince the owner that his present piston equipment is not exactly ideal and can be improved on.

However, before installing any other pistons, whether they be cast iron or

The Readers' Clearing House

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

Readers' names will not be published with articles, if a request to this effect is received with the letter. The name and address should be given, however, so that we can send a copy of our answer direct by letter. This saves waiting for the answer to be published, which sometimes occurs several weeks later, depending upon the space available.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

aluminum alloy, we would strongly recommend that you remove the crankshaft and test it for straightness and balance.

ADJUSTING REAR MAIN BEARING ON STUDEBAKER

Q—Advise how to put new starting brushes in a Cadillac 8, 1918 motor generator.—An Illinois Reader.

The motor generator must be removed from the car and the easiest way of getting brushes in is to take off the commutator end bracket. While you are installing new brushes on the starting motor side of the machine it might also be well to put in a set of generator brushes. At the same time, if the commutators are very rough it would be well to remove the armature and have the commutators smoothed up in a lathe.

This is ordinarily a job that must be done with great care and the tool must be properly sharpened to keep from dragging the copper from one commutator bar to another, which will short the armature. After the armature has been turned it is well to clean out the slots in between the commutator bars.

Breather Pipe Smokes

Q—We had a customer come in the other day with a small four-cylinder Overland car and he complained about a disagreeable smoke coming from the breather pipe. He stated that he had a set of plain piston rings installed after the car had run 10,000 miles and this did not help any. After that he wrote to the Overland factory and they advised fitting oversize Welever rings and these rings did not help, either.

We are at a loss to know what the cause of the trouble may be. The smoke smells like oil smoke and it does not smoke at the exhaust pipe. The smoke at the breather pipe, however, starts almost as soon as the engine is started. Could it be a sand hole in the piston head or is it possible that carbon underneath the piston head gets very hot and causes this condition?—G. A. Phillips, Purcellville, Va.

We do not think a blow hole in the casting is likely, or the raw gas would be forced into the crankcase and would be followed by a flame occasionally which would probably blow up the crankcase. At least, we heard of this happening in one case where the center hole on which the piston was turned had been drilled too deep and caused this trouble. We believe that when the various piston rings were installed that they were not properly fitted and that the condition is due to leakage past the piston rings.

To check this, would suggest your observing the action of the smoke which comes from the breather pipe and see if it does not come in puffs at each explosion. Cast iron pistons in this small Overland car should be fitted with a clearance of .002 to .003, while aluminum pistons should be fitted with a clearance of .004 to .005. We would suggest your checking this clearance by means of micrometers and also check to see whether the cylinders are more than .0025 out of round. If the cylinders are substantially circular but the clearance is too great, you will be unable to overcome the condition by the use of oversize piston rings, and it will be necessary to put in a piston which is .0025 oversize. Then with the pistons properly fitted, which can be done by lapping in with compound, you can then install the proper rings.

One of the Welever rings in the ring groove, which is third from the top, should cure this condition, assuming this and the other rings are properly fitted. To get proper size rings you should micrometer the cylinders and get rings the same size. If the rings are too much oversize and are cut down by filing at the joint, you will have a ring which does not fit and will continue to get the leakage trouble which causes this condition.

A Garage and Hotel Building

Q.—Kindly give me suggestion as to building a garage on an inside lot 75x150 ft., building to be three stories, upper two to be used for hotel accommodations with a lobby on the second floor.

The main floor is to be used for general repair, storage, parts room, showroom to accommodate two cars and tractors, office room, shop to employ about seven to ten men, a lathe, drill press, arbor press, welding equipment, battery stand room, overhead track and, if possible, two wash racks, ladies' restroom, storage to accommodate as many cars as possible.—Las Vegas Sales Company, East Las Vegas, New Mexico.

You haven't a chance of making a practical layout for this kind of an arrangement unless you can get control of the 25-ft. lot adjoining your property and keep the rear part of it free of buildings so that you can get daylight into the garage floor—more particularly the shop. In case you buy the lot it would be a good plan to build a small store of some kind on the front part and rent it to pay interest on the investment, then you could use the yard in the rear for many purposes, such as overflow storage of finished repair jobs.

It would also be well to make the ceiling of this lower floor high enough to give headroom for a mezzanine floor in connection with the showroom; this would accommodate the office, women's restroom and office toilets, but more important the ceiling height would let the light extend further back into the shop and give a better working light back away from the windows all around.

Another advantage of the high ceiling would be the better ventilation af-

Architectural Service

IN giving architectural advice, **MOTOR AGE** aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and, in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things,

we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

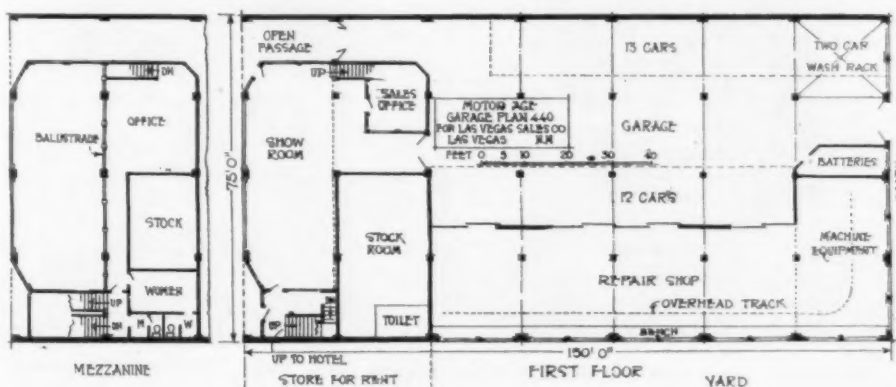
What departments are to be operated and how large it is expected to be.

Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.



forded. You may have trouble from the gasoline fumes and oil smells penetrating to your hotel floors and for that reason the air circulation should be as good as possible. It would also be a good plan if you have a rear hotel entrance to make it entirely separate from the garage. If it leads directly to the alley there will be no chance for fumes to follow the stairway or elevator shaft.

You may have investigated the situation and become convinced to the contrary, but we would hesitate to recommend the building of a hotel over a garage on account of the fear of fire

and the prejudice it might raise in the minds of your prospective guests.

If reinforced concrete is used and an automatic sprinkling system installed, much of this prejudice may be overcome but serious consideration should be given.

We have placed the hotel entrance so that the stairway landing is on the same level with the mezzanine floor, so that women may get to the waiting room without passing through the office. Guests of the hotel will have a view of the showroom nearly all the way upstairs.

ONE CYLINDER PRODUCES LOUD NOISE

Q.—We have a Studebaker car on which No. 1 cylinder produces a loud noise in the exhaust. When the No. 1 spark plug is shorted out, this excessive noise is no longer noticed. What is the cause of this condition?

1.—One possibility is that the No. 1 cylinder has more compression than the others, due possibly to better fitting rings, better seating valves or possibly slightly less clearance due to a peculiarity in the cylinder head casting. It is also possible that the other valves and piston rings are not well seated. If you have ground the valves recently, that eliminates one possibility, and while you suggested partially closing up the exhaust outlet, we would certainly not do that.

If you care to, you can make up a compression gage out of the Schrader tire gage and an old spark plug shell. With this gage you can check the compression in the different cylinders, and if the compression in the No. 1 cylinder is a great deal higher than the others, it might be possible to reduce it by judiciously removing material from the inside of the No. 1 cylinder head. Unless such a condition occurs on a car oper-

ated by a very fussy owner, we would not pay any attention to it, especially if it does not affect the running of the car.

2.—Is a device such as the American steam carburetor any great benefit to an engine? Is there an air washer for a touring car operating on the same principle as the one on the Fordson tractor? Would the washer on a Fordson tractor be good to install on a passenger car?

2.—The question as to advantage of introducing moisture into the cylinder is one on which there is a great deal of discussion and authorities do not agree. Names of various air washers for passenger cars will be given by letter. The air washer on the Fordson tractor is chiefly used for the purpose of keeping dust and dirt from getting into the cylinders and causing excessive wear. This is especially necessary when plowing over dry ground due to the clouds of dust that are raised. It is no doubt an improvement that will come on passenger cars sooner or later, but we are not informed as to whether the Fordson tractor air washer would be suitable for use on the average passenger car.

3.—Would it be advisable to rap the gasoline line, that runs from the tank to the vacuum tank, around the exhaust

pipe? This would have the effect of warming up the gasoline.

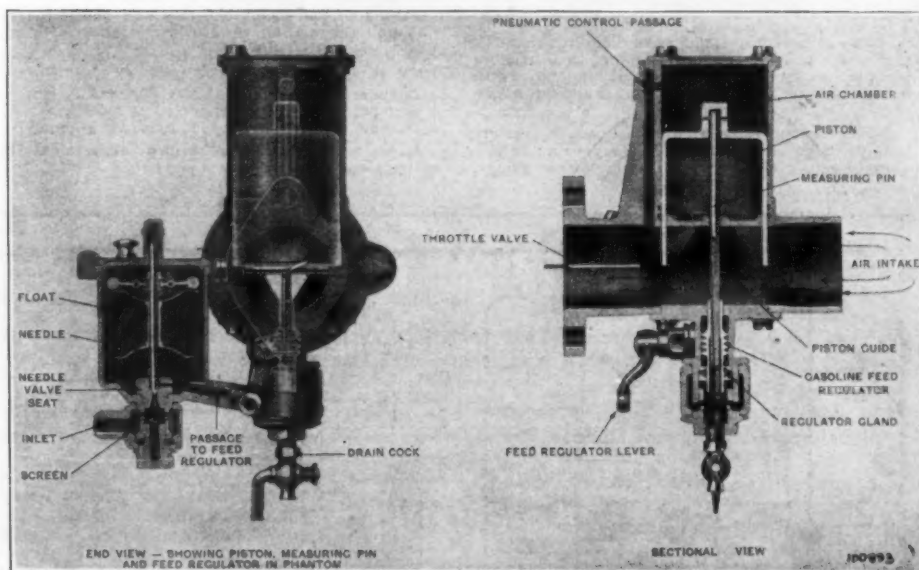
3.—We do not believe that this would be advisable. In the first place, the heat would be applied to the gasoline a long time before it gets to the cylinders. It would then have a considerable chance to cool off in the vacuum tank and in the carburetor. Another possibility is that the heat would evaporate the gasoline and cause the gasoline vapor to form in the pipe and prevent free flow of the fuel into the vacuum tank. The proper place to apply the heat is either in the carburetor or just above the carburetor in the intake manifold. One way of doing this to advantage is to use a hot-spotted manifold of which there are several on the market.

4.—Do you think 15 miles to a gallon is enough to get from a Studebaker Six? —H. C. V., Marion, Iowa.

4.—It is hard to answer this question as so much depends on the condition of the engine and the model. From your letter we are not able to make out just which model you refer to.

MOTOR AGE Note—When we got to the end of this letter we found that the subscriber signed his initials instead of his name. We are accordingly unable to answer his letter except through the columns of **MOTOR AGE**.

Hudson Carbureter Regulation



Hudson Model O Carburetor

Q—We have a 1920 Hudson speedster which has been driven about 12,000 miles. When this car is started it runs on one, two, and sometimes three or four cylinders in low gear and in second. As soon, however, as it gets into high it runs on six cylinders. We have had several mechanics try to remedy this condition, but with no success. Is this due to trouble in the carburetor and how can it be corrected?—S. J. Webb, care W. H. Young, Aberdeen, Miss.

This is an unusual condition and we would accordingly suggest systematic testing of both ignition and carburetion to determine the cause. You do not state whether you again get the missing when running in high gear at high speed. It occurs to us that possibly the ignition system is not working properly at high engine speed.

For best results the interrupter points should be set with a gap of .015 to .018 in. and the spark plug gaps should be .025 in. If you have one of the adjusting wrenches that come with the Delco outfit you will have thickness gages that are suitable for making these settings. You can check the spark by disconnecting one wire at a time from a spark plug and holding it within 3/16 in. of the engine. This test should be made inside and not outside in bright sunlight. You can then get a good idea of the spark, for it should jump this 3/16 in. air gap without missing and should have a red haze or flame in addition to the white streak at the center of the spark.

You should check this spark at low speed and then speed up the engine a bit and see if the spark misses. Missing can sometimes be detected better by listening than by looking at the spark. For listening to the spark you can use a roll of cardboard or heavy paper about 3 in. in diameter, holding one end to your ear and putting the other end near the pumping spark.

Another thing to check is the timing to see that the spark in the retard position occurs approximately on top dead center or when the piston has gone down about 1/64 in. from its upper position. We would also suggest your checking the valves to see that none of them are sticking, also check the clearance between the valve stem and push rod to see that it is approximately .003 in. when the engine is hot. We would also suggest your checking compression, and it would be a good idea to take the spark plugs apart and be sure that the porcelains are clean and not cracked.

There is a faint possibility that the carburetor is giving trouble and we are accordingly showing an illustration of the carburetor. Regulation of the mixture is accomplished by the piston which is drawn upward in proportion to the suction of the engine. As the piston is drawn upward it lifts a measuring pin in the lower end of which is a V-shaped notch. The cross-sectional area of this notch is greater at the lower end, so that the farther up this pin is drawn the greater is the opening for gasoline getting from this lower portion of the carburetor up into the air passage.

In the right-hand sketch will be seen a part called "gasoline feed regulator" and this part is lowered by the action of the gas adjustment. In the left view can be seen a small gear and rack which accomplish the lowering of this gasoline feed regulator. Either raising the measuring pin or lowering this gasoline feed regulator results in enriching the mixture. Around this gasoline feed regulator sleeve will be seen a regulator gland and it is possible that the packing of this gland is worn out and allows gasoline to leak on the outside of the gasoline feed regulator and make the mixture unduly rich.

We would accordingly suggest your disassembling the carburetor sufficiently so that you can inspect the packing around this gasoline feed regulator sleeve. With good compression in the engine, good spark plugs, a spark that hits every time and the carburetor properly packed, and its piston freely operating, you can hardly fail to get good results. If ignition trouble is experienced you should try a new coil; also clean the interrupter points and see that the contact surface is not worn away; also see that the adjustable interrupter contact bracket is not loose.

BUILDING A RACING CAR FOR HALF MILE TRACK

Q—We are building a half-mile track racing car and would like to know if the Old Dodge Bros. rear axle, full floating type, would be O. K. for the job, or if the new three-quarter floating type would be better. We like the full floating type better than the three-quarter floating for this work.

1—While either axle would probably do the job, it is also the personal opinion of the Clearing House Editor that the full floating type would be somewhat more suitable.

2—Would it be just as well to remove the spider gears and lock the differential so as to do away with its action?—H. W. Ray, Herkimer, N. Y.

2—It would be undesirable to do this. This is especially true on a half-mile track where the turns are frequent. On the turns there will be considerable variation in the revolutions of the right and left rear wheel, and if the differential is locked there will be considerable sliding action, which will reduce the power and possibly give trouble, due to wear of the tires and difficulty in steering.

LIEN RIGHTS EXPIRED

Q—Last March we delivered a car to a customer which we had repaired for him, the bill amounting, for parts and labor, to \$225. He paid us \$75 cash and we took his note for \$150. The note is now past due and he says he cannot pay it. What we would like to know is, is it too late to place a mechanic's lien against the car under the above circumstances?—Mosher Motors, Dixon, Ill.

You have no lien on the repaired car at this late date. To preserve your lien you must file a claim for repairs with the County Recorder, setting forth your charges and other information as required, and this must be done within sixty days after the repairs are made. If you have thus preserved your lien you are not required to retain possession of the repaired car in Illinois. The statute creates a special right and it must be strictly followed.

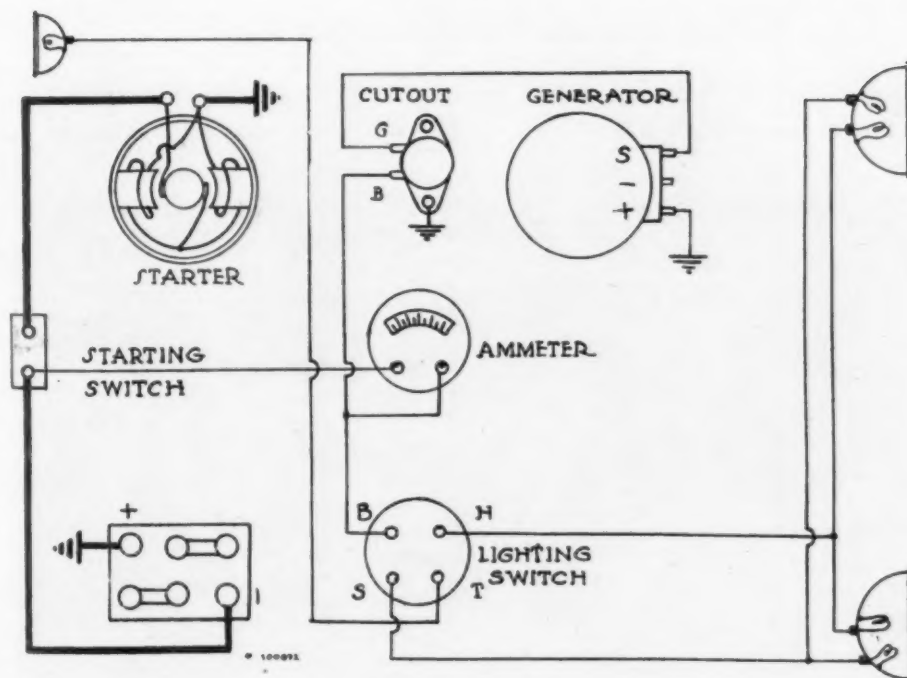
Your remedy now would be to sue for judgment and then levy on the car if possible.

Rewiring a Peerless

Q—We would like to have your advice as to rewiring a Peerless 6-48, 1914 touring. We are converting this into a tow truck. The wires have all been cut and torn off and we wish to use the original 3-wire Gray & Davis generator with a new and simpler wiring system. The starter is O. K., also the wiring for the starter, as it turns the engine over, but we do not know exactly how to connect up the lighting circuit in the most simple way.

1—The original generator had three terminals which were, respectively, plus, minus and series. In one of the illustrations this generator as originally wired is shown at the left. The battery was connected across the plus and minus terminals so that the generator operated as a straight shunt machine as far as charging the battery was concerned.

For purposes of illustration we have left out all complications such as cut-outs and junction boxes. The lights, however, received current from the plus and S terminals and it will be seen that the S terminal is negative but the current must flow through a heavy series winding in going to the lights. The generator was a constant-speed machine, the constant speed being obtained by a centrifugally operated clutch which released at 1,000 r.p.m., so that no higher speed could be obtained. When the lights were turned on and additional current was needed it was obtained by taking the current through the series winding, which had the effect of helping the shunt



Simplified Wiring of 1914 Peerless

winding and making the generator give out more current.

Maintenance of this slipping clutch is quite a problem and it is usually considered better to eliminate the clutch entirely and let the engine drive the generator at variable speeds, depending on the engine speed. It is then necessary to get some type of regulation and, as

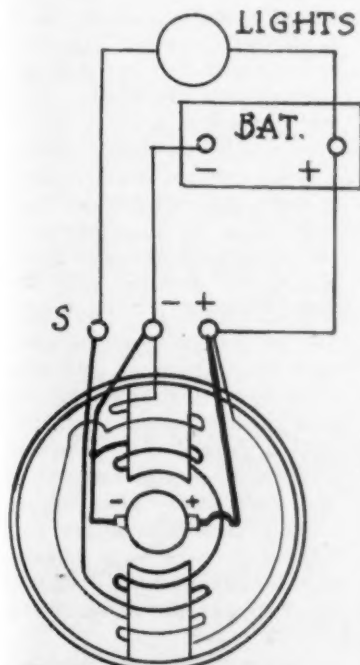
shown at the right of this same illustration, we have the generator with the series field reversed. The lower field coil which formerly connected to the S terminal is now seen connected to the left brush, and the negative terminal while the upper field coil, which was formerly connected to the left brush and the negative terminal, is now seen connected to the S terminal.

The general scheme of wiring is also shown very much simplified in connection with the changed wiring for the generator. With this new method of internal connection the negative terminal will not be used, as the S terminal is in effect a negative terminal getting current through the series winding. This winding will now have a bucking effect and will tend to limit the current at high speed.

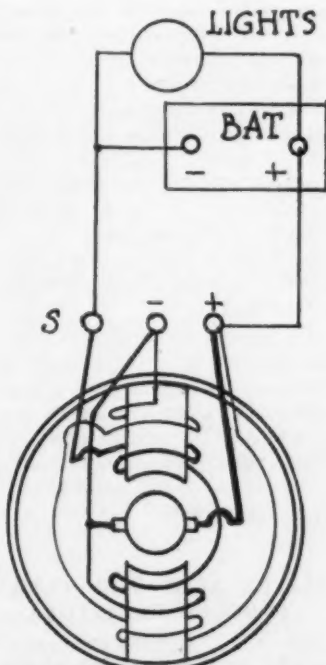
The other illustration shows a simplified wiring that can be used. If fuses are desired, three of them can be used, one in the headlight, one in the side light and one in the tail light circuit. If only one fuse is desired, it can be connected in circuit between the ammeter and lighting switch just before the B terminal on the light switch. The cutout is any standard 6-volt cutout, and most any ammeter can be used.

2—Advise what type of carburetor would function properly on this car. We cut the old Peerless casting off and installed an old Rayfield, which is not doing the work. It loads up and then spits. Would you advise cutting the manifold off short, say about 3 in. from the top?—A. G. Klemp, Highland Park, Ill.

2—The trouble you are having may not be in the carburetor and you will doubtless find that a hot-spot manifold would give better results on this engine. Additional information will be given by letter.



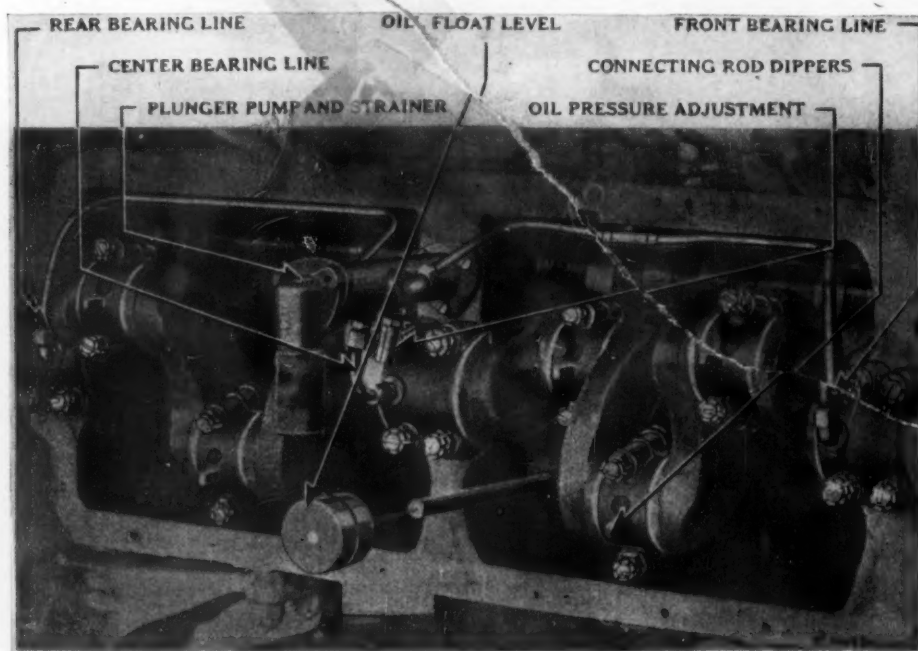
ORIGINAL CIRCUITS
SERIES FIELD INCREASES
OUTPUT



CIRCUITS CHANGED FOR
BUCKING SERIES EFFECT.

Gray & Davis Generator on 1914 Peerless. Connections Changed to Get Series Field Regulation

Oiling System On Rutenber Engine



Q—We would like to know the make of universal joint on a Paige 1918 or 19 model 6-39.

1—We have no definite information on this. However, the rear axle was made by the Salisbury Wheel & Axle Co. and it is quite likely that the universal joint, which is mounted at the front end of the axle torque tube, was also made by the Salisbury company. However, universal joints for this car may be obtained from any authorized Paige distributor.

2—We would like an oiling diagram of the Rutenber engine used on this car. This engine was at one time overhauled and after that continually burned out connecting rods, due to low oil level or short dippers. This condition was eliminated but now we experience the opposite trouble, for the car uses a gallon of oil every 100 miles. The exhaust does not smoke and the crankcase does not leak. The oil lines have been changed at some time, so we would like to have the diagram in order that the original system may be reinstalled.—A. D. Stuehm, Peotone, Ill.

2—In the illustration shown a view is given of the under portion of the engine which clearly shows the oil piping. The lower part of the crankcase has been removed and with it the troughs into which the connecting rods dip. The oil pump is of the plunger type operated from an eccentric on the camshaft. It takes oil from the bottom of the crankcase through a strainer and sends it to the main bearings. Three pipes will be seen going to these main bearings, and from the main bearings oil overflows into the pan into which the connecting rods dip.

This pan, or series of troughs, should have one or more overflow holes so located that the oil level will be from $\frac{1}{8}$ in. to $\frac{3}{16}$ in. above the lower end of the connecting rod dippers. This dimension is a very important one and great care should be taken in checking up this

point. Scales and straightedges may be used to check the distance of the end of the dippers below the bottom edge of the upper part of the crankcase.

In similar manner, straightedges and scales should be used and, if necessary, a special fixture should be bent up for the purpose of measuring the location of the overflow hole. It is quite possible that someone, in working on the oil system, has plugged up this overflow hole or bent up the edges of the pan so that the oil level is altogether too high. In the oil line running to the rear main bearing it is customary to have one very fine hole somewhat less than $\frac{1}{64}$ in. in diameter. This has at times been used to allow some oil to get into the oil pan aside from what leaks there from the main bearings. In some cases this is drilled with a number 50 or 60 drill and in some cases it has been plugged up in order to give more pressure to the rear main bearings.

It also occurs to us that in a car four or five years old trouble such as you mention may be experienced due to wear in pistons and cylinders and it might be worth while to investigate and see if the cylinders need reconditioning, in which case, of course, new pistons and rings would be required.

MURIATIC ACID FOR CLEANING CLOGGED RADIATORS

Q—We have a 490 Chevrolet, 1918 model, and have been thinking of making a burning-in stand of same. We would like to make it Universal so as to handle all makes of engines. Should the engine be burned in by revolving in the normal running direction or does it make any difference?

1—The burning-in job, when properly done, gives a good smooth finish, so we cannot see that it makes any difference

which way the engine rotates when the work is being done.

2—We also figure on arranging the engine so that it will be possible to use an extra long shaft connecting with the starting crank for starting an engine in which the bearings have been tightened up in the car.

2—To use an automobile type engine for this purpose you will need the transmission and will probably have to use the low gear only. It also occurs to us that you may get a job in which you will have great difficulty in starting the tight engine even with your driving engine in low gear.

You may find it necessary to use two transmissions, the regular one that comes with the engine, and some other transmission that you can pick up. By this means you can get a double reduction so that if you get a 9 to 1 reduction you would get as much as 81 to 1 by using two of them. By this means you would be sure to break the engine loose. Then when you get the engine turning over you can probably stop and shift into some gear which will give slightly higher speed.

In connection with this burning-in problem, would suggest that you read the article on this subject on page 42 of the November 9th issue of MOTOR AGE.

3—What is best to use when a radiator is so clogged up with scale as to prevent water circulation? We have been using soda and lye but do not seem to have much success. We have heard that muriatic acid is better but have never tried it. If this acid is used, what proportion would be suitable?

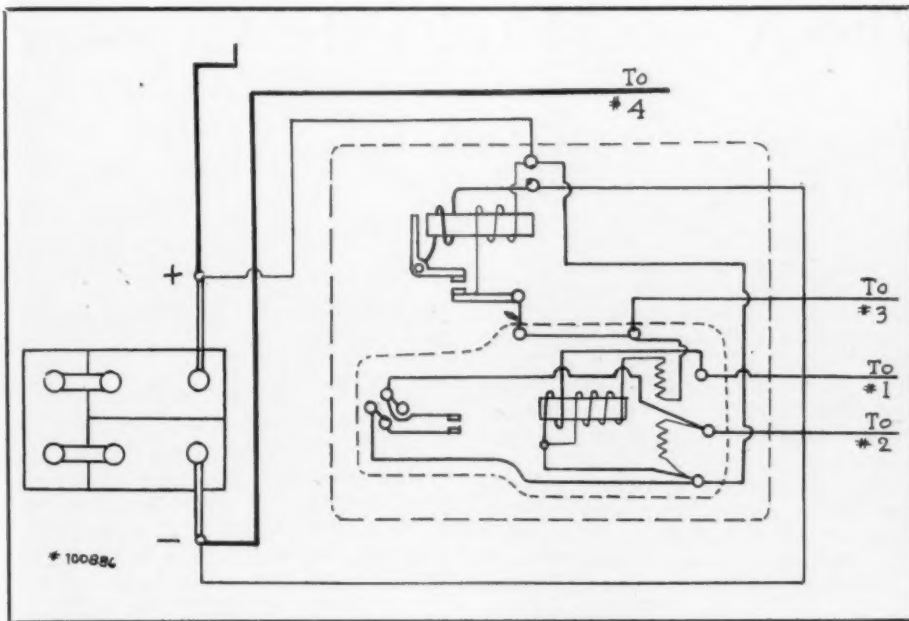
3—The soda and lye are helpful in removing oil and dirt but have no effect on lime deposit. Muriatic acid can be used in a fifty-fifty solution; in other words half acid and half water. This acid can be put into the radiator while it is on the car or the radiator can be boiled in the acid if a suitable tank is available. Great care, of course, should be used in employing this method, especially if used while the radiator is on the car. After the acid has been put in and the engine run to cause it to heat up, it should be carefully drained off.

After this the system should be thoroughly rinsed out with water with some soda in it so as to neutralize the acid that is in the cooling system. Radiators often become so clogged that no method will give satisfaction as far as cleaning is concerned, and under these circumstances the only remedy is a new core for the radiator. There is a patented solution on the market which is said to be quite effectual and the name of this will be given by letter.

4—We have been figuring on making a portable test bench for generator and starter work. Could you give us some pointers in this regard?—South Dakota Reader.

4—This information and the names of concerns that make parts for building your own test bench will be given by letter.

Packard Wiring Diagram

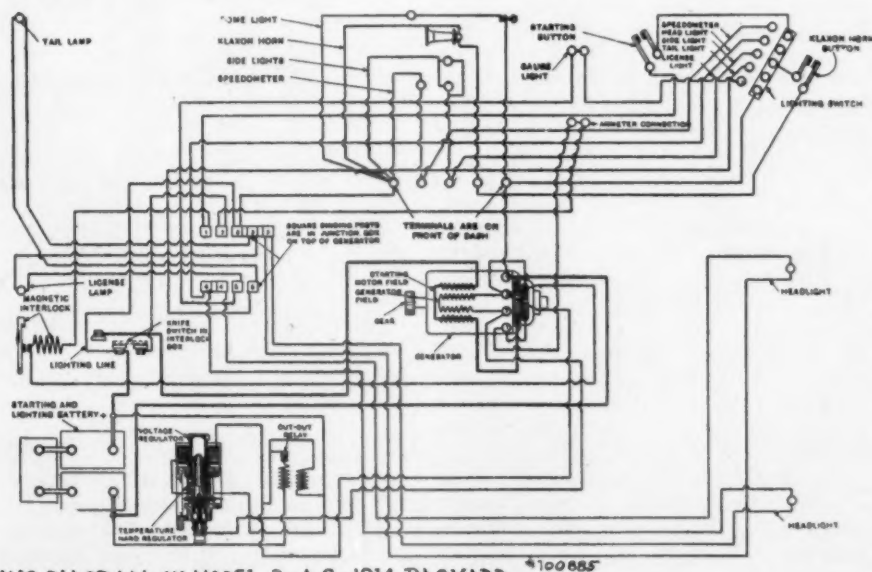


Wiring diagram model 3-48-1914 Packard

Q—We have a 1914 six-cylinder Packard equipped with Bosch ZR6 magneto, Delco motor generator and Bijur regulator on running board ahead of battery. The car number is 50,596. What we want is a diagram of all the electrical circuits as this car has had all of the ignition and lighting cables torn completely off. We have all the lights working but wish to know more about the coil, regulator, and dash and battery connections.—J. J. Steish, Cincinnati, Ohio.

Two illustrations are given, one being

the regular wiring diagram, which shows the old type mercury regulator. In conjunction with this, however, we show another wiring diagram which gives the internal connections of the Bijur regulator. On this sketch the external connections are similar and are marked with reference to the motor generator terminal numbers. This should enable you to wire up the car properly with this type regulator.



WIRING DIAGRAM ON MODEL 3-A-8-1914 PACKARD

Bijur regulator on model 3-48-1914 Packard

GENERATOR CHARGES AT LOW RATE

Q—We have a Hudson car model "J," year 1917. Generator on this car is a Delco and will not charge more than 6 or 8 amperes. We tested the armature, fields, brushes and connections and they are all O. K. We put a new ballbearing in the armature, also new third brush and

new contacts on the generator switch, also undercut the mica and put the battery in good condition. The generator, however, still charges only 6 or 8 amperes at speed of from 10 to 35 kilometers per hour. What is the trouble?—Francisco Escarcega, Puebla, Mexico.

Inasmuch as the generator charges

consistently but at a low rate we assume that you have not shifted the third brush. This should be moved in the direction of rotation in order to increase the output. It is possible that the generator clutch is slipping but if this were the case the charging current would probably come higher at times and at other times the slipping would allow the charging current to drop down to zero.

However, it will do no harm to check the clutch by using a pipe wrench on the starter pinion at the rear end of the motor generator and trying to turn the armature against the normal direction of rotation. If you do this, some discretion should be used as only a moderate twisting effort should be employed, merely enough to see if the clutch slips easily.

If the clutch is in good condition and the third brush is properly adjusted you should get 12 or 15 amperes. About the only other thing that occurs to us that might give a low output is a partial opening in the armature which however, would show up by producing two burnt places on the commutator, at opposite sides.

CHANGING GENERATOR WINDING

Q—We would like to have some information on a three brush model G H Autolite generator which came off from a Chevrolet 490, which runs this generator at 3000 r.p.m. Would it be possible to rewind the field coils so that the generator could be mounted on an engine that would drive it 1500 r.p.m. and still do its work properly? If so, what size wire would be required?—R. L. Brewster, Des Moines, Iowa.

1—The G H Autolite generator is supposed to charge 5 amperes at approximately 800 r.p.m., 10 amperes at approximately 1100 r.p.m., 12.5 amperes at approximately 1250 r.p.m. and 15 amperes at approximately 1500 r.p.m. From this point on the charging current does not increase to any extent and may drop off, due to the action of the third brush method of regulation.

The speeds you have given are maximum engine speeds and a car does not usually operate with the engine running at these speeds. We would accordingly, suggest your studying the above data to see if the generator is not suitable the way it is at present. It would be possible to put more turns in the armature but to do this you would require finer wire. The generator would then cut in at a lower speed but as soon as you start to get the charging current of 10 or 12 amperes from it, you would find that the armature would overheat, on account of the finer wire.

In other words, when a machine is once designed it is rarely advisable to change it as you usually get into trouble of some sort. We accordingly, would suggest that you either use the generator as it is or get some other type designed for the purpose. A generator to operate at lower speeds usually has to be larger with a longer armature and more iron and copper in the outfit.

A "Hard Nut" Who Almost Broke the Cracker

Friend Tom Buys a "Runwell" Sedan After a Harrowing Experience With the "Harding" Agent

This story is the recounting of an actual experience in the purchase of a car by a man known to a member of MOTOR AGE staff.

TOM had a reputation among my friends of being a "peculiar old duck," which, when interpreted into automobile language might mean that he'd be a hard nut to crack if it came to selling him a car. However, when we would be out driving in my bus, I noticed that Tom looked longingly at a certain well known make of automobile, a sport model, which I shall call the Harding.

Once I ventured to ask if he were thinking of buying one of the Hardings but he said, "No," in a way that might just as well have been "Yes." Later he confessed a weakness for that particular car and shortly after he declared he would have no other.

"There isn't anything like it in the world," he told a friend, "I'm sold—completely sold on a Harding Sport. Whatever people waste their money on another make of car for, I don't know and in a short time, I'm going to place my order for one. I won't be happy until I do."

Another friend who owned what I shall call a Runwell informed Tom that he'd be mighty sorry if he didn't buy the same kind of car as the one he owned, but Tom cussed a blue streak and when he got through telling the Runwell owner what was wrong with his car we listeners began to wonder how the deuce the Runwell sold any machines at all—they sure were rotten jobs, if Tom was to be believed.

On another occasion, the Runwell boosters tried to change Tom's opinion but he was immovable. A week ago Tom called me up and told me he was going over to buy his Harding and wanted me to come along and drive it back. I gladly consented and together we went to the agency, he like a four-year-old on Christmas morning.

Tom's Dream of "Stepping Out"

"Boy," he said to me, "we'll sure do some stepping next summer with that launch. She's a bear—can do sixty without turning on the ignition switch, no expense on upkeep—" and he raved on about a thousand other things.

I wished that I was the automobile salesman who was going to grab off such soft pickings. I honestly think that Tom believed so firmly in the Harding that had someone offered him another make for nothing he would have turned it down, even though had he been forced to pay twice the regular price for the Harding.

When we arrived at the sales agency, I noticed that it was a rather dingy looking place with but two lights burning. These resembled the lights a barber uses over the chair. I was disappointed but Tom saw only his sport model on the floor.

"There it is!" he exclaimed, and his eyes nearly popped out with delight, "look at the lines of that chariot—map, she's a peach, I tell you, a peach!"

Don't you wish you had a prospect like that hanging around loose somewhere? Wouldn't you go out and gather him in before he began to cry?

Then, of a sudden, Tom's attitude changed—he smiled.

"But I'm going to make these guys SELL me that car in their own language—I want to find out what they know about the car that I don't know—" and in we hiked.

An Encounter With a Youngster

A lad, perhaps ten years old sat in a corner with his books, evidently doing his home studies. He regarded us rather suspiciously and, while Tom gloated over the Harding, I began to size up the salesroom. At one end, the plaster from the wall had fallen off altogether and the bare laths shown under the lights like a room in a haunted house. I called Tom's attention to this but he said, "I'm not buying the business, I'm buying this car." He felt and patted the upholstery like Morvich's owner might have done before the start of the Derby. No one appeared on the scene, however, to grab this piece of change and the youngster still looked at us sullenly.

After a bit, Tom turned to him, "Hey, kid, where's your old man—in bed?" he asked smiling with something of hero worship in his eyes, for, wasn't this the son of the man who sold the famous Harding?

"Oh, pop!" the boy bawled out, "c'mon down—they's a couple o' guys here to see you!" It sounded like someone screaming for help but Tom chuckled amusedly.

Then came the great man who sold the Harding—he emerged from a door at the head of a flight of rickety stairs and descended, looking Tom and myself over critically. I didn't know whether to run or put a handkerchief over my face and say, "Boo, I'm a hold-up man."

He regarded the boy at the table for a moment and then scowled. The lad looked scared to death but the man again turned his attention to us, "I was

just helpin' the old lady with the dishes," he explained, "can I do anything fer yuh?"

Tom and I stared at each other—"Well, you MIGHT sell me a car," Tom ventured.

The man looked at us in surprise—was it necessary to call him down from washing the dishes to sell a car? Couldn't we see the cars there on the floor? Wasn't that enough? These were the questions that seemed to appear in the man's eyes.

"Wal," he drawled, carelessly, "I reckon I can do that."

But as has been said, Tom was a hard nut and he hastened to inform the man that he wasn't so sure about that and that he'd have to step on it a little, because he didn't have much time to be buying cars. Again the man looked surprised.

"Which kind of car were you interested in?" he asked.

"Not past tense, old man—don't put it that way," Tom said, "you're heaping up resistance when you do that." But these words didn't mean a thing to the dealer.

It was hard to tell whether Tom was losing patience or whether he was just "making them sell the car," as he said he would. His occupation is purchasing agent for a large meat packer and so he knew how to trip a salesman.

The man walked around the car, evidently looking for something to talk about, then he lifted the hood.

"D'je ever see the motor in it?" he asked.

Tom told him that he hadn't and that he didn't think that he'd be able to with the lights burning so low, but the dealer took no notice of this.

Tom Gets Some Dope on the Motor

"Come over on this side," he invited. We followed and beheld the motor.

"Well, I'll be darned," Tom said to me, "the motor is just like any other car's isn't it?"

"It's a Summertime," I told him and he laughed.

"That doesn't mean a thing to me, old man," he said, "I don't know anything about motors."

The man took this as a signal to tell Tom all about the power plant.

"Oh, yes," he assured us, "It's a Summertime, and it has all standard parts throughout: Wilson & Wilson clutch, Iceberg carbureter, Outright ignition,

Serveslow transmission, Mansized universals, Wooden rear axles—"

"Hold on, hold on," said Tom, "I don't care about all that stuff, I know it's a good car or it wouldn't be on the market, but what sort of service do you give, how's your shop equipped to take care of any work that I might want done, who are the men that work for you, what free service do I get and what is the approximate cost of upkeep for a year—and the depreciation—those are the things that I want to know about."

"Oh, I have a good shop back there and I'll take care of the car for 60 days," the dealer informed him. I could tell that this sort of salesmanship wasn't going to last long—Tom was getting cross and I began to feel sorry for the dealer if Tom should open up on him.

"Why should I take your word for what you have 'back there?'" Tom queried, "why don't you show me—you're making a big mistake by not doing so and that's the only thing that matters to me. I don't care what kind of a motor

or clutch or transmission the boat has, I want to know if you can fix them if they go wrong—"

"Come around tomorrow," the dealer interrupted, "I ain't got the lights on back there, they burnt out."

Tom gaped at me—certainly he was disappointed and together we filed out on the street. Tom was the first to speak.

"I'm damned mad, I am!" he said, "that was a hell of a deal."

We walked home. Last night when the 'phone rang and I answered it, it was Tom's voice I heard.

The Runwell Makes Another Friend

"Hey," he said, "meet me at the drug store, I've learned to drive my Runwell."

You could have knocked me over with two atoms. I met him a little later and he was driving a brand new Runwell sedan.

"Your's?" I asked, not quite able to assure myself.

"Sure, it's mine," he said, "damned nice car, eh?"

It was my turn to chuckle because he had never said anything more fervently in his life. I didn't dare ask him what was the matter with the Harding—I'm sure I know and this morning coming down in the car, I met the friend who first tried to interest Tom in his Runwell.

"Did you know that Tom has bought a Runwell?" I asked.

"Sure," he replied. "He told us about the incident at the Harding agency. I realized that Tom was accustomed to high-class salesmanship so I got the boy who sold my car to me and put him on Tom's trail, tipping him to use silk gloves, and he put it across."

Tom isn't the only one who knows and likes "high class" salesmanship—everybody does and while this is an extreme case, still it is one that teaches a lesson. When you start to sell, **SELL**. Don't underestimate your prospect—he may be a much better critic of your efforts than you have any idea.

What Six Owners Call "Service"

1. A Bank President

SINCE it is a proven fact that the owner is boss, let's go right to the owner and find out just what he or she considers good service and learn, from the customer's angle, what improvements are needed so that "the boss" will be satisfied. In selecting six people to interview, an effort was made to cover the owner field in all its classes—from a bank president to a bricklayer and everyone in between. The truck farmer, the salesman, the housewife and the business man all have their own ideas on what constitutes "paying service" for the garage owner.

Wm. N. Jarnigan, president of the Central Mfg. District Bank in Chicago, has advanced a few ideas which probably would not occur to the "insider," the man who makes his living selling and servicing motor cars.

"I have often wondered," said Jarnigan, "just what some garage owners realize on their service departments. I have been into the shops of a few automobile establishments and there is only one in this big city where I would keep my car or leave it to be repaired.

"Cleanliness and courtesy are the things that appeal to me anywhere, and especially where it requires effort to maintain them. It should require no effort anywhere to be courteous, I refer to cleanliness when I speak of effort. In a garage with its grease, gas and oil, it is hard to keep the whitewashed walls in a spotless condition and anyone who would insist on that would be unfair, but there is no necessity for tools, cloths, pieces of equipment and the like lying around on the floors, kicked here and there by careless employees.

"Nor is it at all inviting to look at a workman's bench which is littered with

every symbol of untidiness—I remember in one garage not far away seeing a broken barrel stave with a scoop of black grease on it, thrown on the floor of a beautiful sedan and a dirty mechanic crawling in and out of the car, stepping into the grease and leaving the imprint of his heel all over the floor of the car. The really humorous side of this was that the man was so careful to see that newspapers were spread on the seats, so that the dirt from his jumper would not be left there. I was waiting for the shop foreman to finish with another man at the time but that was enough for me—I waited no longer.

"How did I happen into the garage where I now keep my car?

"It is close to my home and one evening before setting out, I drove over there to get some gasoline. An attendant met me at the pump with a 'Good evening, sir,' and courteously inquired as to 'how many.' Then, in as diplomatic a manner as ever anything was done, he extracted seventy-five cents from me for a set of anti-rattlers for my windshield and doors.

"I liked it, and as I was driving away he genially called after me to stop in again. That night I brought my car back there and it has been there ever since."

Jarnigan here indicated that he especially liked the splendid memory everyone employed at "his" garage seemed to have—everyone knows his name and seems to know everyone else who comes in.

"Three times last year I had something go wrong with the car and each time the car was ready for me at the exact time it was promised. On one occasion, something happened to the work they had done and they made it good—in the

spirit that has made them a success—it honestly hurt their feelings to think that they had not done the job right in the first place.

"Of course," Jarnigan added, "my opinion is only one opinion—I don't believe I would want depositors coming up to me continually and telling me how to run my business, but I'll discharge any employe who is not up to the standard required by our people."

All of which goes to show that while Jarnigan does not like harsh or unreasonable criticism, he is still open to the suggestions which come from those who are honestly interested in bettering the bank's service and in this spirit he advanced his opinion on the garage business.

"ONE A DAY"

Much has been printed and much more will be printed about the attitude and conduct of the automobile salesman. All of this material says much the same thing, but each effort at outlining a course has its particular place if it appeals to some salesman and makes him more efficient.

One of the latest efforts along this line is "One a Day," by Ray E. Brouillet, who is content to call himself a compiler rather than an author. He is an automobile salesman and in several ways his pamphlet is different. We had a young salesman read it and he said that he found much of value in it.

"One a Day" (meaning selling one automobile a day), is published by The Sales Efficiency Publishing Co., Monadnock Bldg., San Francisco, and is sold at \$1 a copy. It is a paper-bound pamphlet of 48 rather small pages.

COMING MOTOR EVENTS

AUTOMOBILE SHOWS

Allentown, Pa.	Semi-Annual Automobile Show	Feb. 3-17
Winnipeg, Man.	Annual Automotive Equipment Show	Feb. 5-10
Charlotte, N. C.	Annual Automobile Show	Feb. 5-10
Lansing, Mich.	Annual Automobile Show	Feb. 5-10
Toledo	Annual Automobile Show	Feb. 5-10
Winnipeg, Man.	At Minto Barracks	Feb. 5-12
Waterbury, Conn.	Annual Automobile Show	Feb. 5-12
Salisbury, Md.	Automobile Show	Feb. 6-10
Cincinnati	Automobile Show	Feb. 7-14
New Brighton, Pa.	At Junction Park	Feb. 7-14
Kewanee, Ill.	Kewanee Automobile Dealers' Assn.	Feb. 8-10
Albuquerque, N. M.	Sixth Annual Show	Feb. 8-10
Kansas City, Mo.	Annual Automobile Show	Feb. 10-17
St. Louis	St. Louis Automobile Dealers' Assn.	Feb. 10-17
Norfolk, Va.	Annual Automobile Show	Feb. 12-17
Kalamazoo	Annual Automobile Show	Feb. 12-17
Utica, N. Y.	Annual Automobile Show	Feb. 12-17
Dallas, Texas	Dallas Automobile Trades Assn. Show	Feb. 12-17
Flint, Mich.	Flint Dealers' Assn.	Feb. 12-17
Fort Dodge, Ia.	Annual Automobile Show	Feb. 13-16
Orlando, Fla.	Annual Automobile Show	Feb. 13-17
Sioux Falls, S. D.	Annual Automobile Show	Feb. 14-17
Ottawa, Canada	Show	Feb. 15-17
Columbus	Annual Automobile Show	Feb. 15-21
Hartford, Conn.	Annual Automobile Show	Feb. 17-24
Atlanta	Annual Automobile Show	Feb. 17-24
Akron, O.	At Central Garage	Feb. 17-24
York, Pa.	Annual Automobile Show	Feb. 17-24
San Francisco	Exposition, Auditorium	Feb. 17-24
Sioux City, Ia.	Sioux City Automobile Dealers' Assn.	Feb. 17-24
Salt Lake City	Annual Automobile Show	Feb. 19-29
Grand Rapids, Mich.	Annual Automobile Show	Feb. 19-24
Mt. Clemens, Mich.	Annual Automobile Show	Feb. 19-24
Louisville	Annual Automobile Show	Feb. 19-24
White Plains, N. Y.	Annual Automobile Show	Feb. 19-24
Schenectady, N. Y.	Annual Automobile Show	Feb. 19-24
Springfield, O.	At Memorial Hall	Feb. 19-25
Bethlehem, Pa.	Annual Automobile Show	Feb. 19-Mar. 1
Trenton, N. J.	Annual Automobile Show	Feb. 21-24
Springfield, Ill.	Springfield Automobile Dealers' Assn.	Feb. 22-24
Brooklyn, N. Y.	Annual Automobile Show of the Brook-	
	lyn Motor Vehicle Dealers' Assn.	Feb. 24-Mar. 3
Youngstown, O.	Youngstown Automobile Dealers' Assn.	Feb. 24-Mar. 3
Albany, N. Y.	Annual Automobile Show	Feb. 24-Mar. 3
Des Moines, Iowa	Annual Show	Feb. 25-Mar. 5
Chicago	South Mid-Town Automobile Show at	
	Midway Auditorium	Feb. 26-Mar. 3
Muskegon, Mich.	Annual Automobile Show	Feb. 26-Mar. 3
Syracuse, N. Y.	Annual Automobile Show	Feb. 26-Mar. 3
Springfield, Mass.	Annual Automobile Show	Feb. 26-Mar. 3

Omaha	Annual Automobile Show	Feb. 26-Mar. 3
Yonkers	Annual Automobile Show	Feb. 26-Mar. 3
Oklahoma City	Annual Automobile Show	Feb. 26-Mar. 3
Portland, Me.	Annual Automobile Show	Feb. 26-Mar. 3
Evansville, Ind.	Annual Automobile Show	Feb. 26-Mar. 3
Malone, N. Y.	Annual Automobile Show	Feb. 28-Mar. 3
Poughkeepsie, N. Y.	Annual Automobile Show	Feb. 28-Mar. 3
Mankato, Minn.	Mankato Automobile Assn.	Feb. 28-Mar. 4
Harrisburg, Pa.	Thirteenth Annual Automobile Show	Mar. 3-10
Ft. Worth, Tex.	Annual Spring Show	Mar. 3-10
Indianapolis	Indianapolis Trade Association	Mar. 5-10
Bay City, Mich.	Duluth Automotive Dealers' Assn.	Mar. 5-10
Duluth, Minn.	Third Annual Queens County Show	Mar. 5-10
Flushing, N. Y.	Annual Automobile Show	Mar. 5-10
Amsterdam, N. Y.	Annual Automobile Show	Mar. 5-10
Carlisle, Pa.	Chamber of Commerce Show	Mar. 5-10
Nashville, Tenn.	Annual Automobile Show	Mar. 5-11
Galesburg, Ill.	Annual Show	Mar. 6-10
Oswego, N. Y.	Annual Automobile Show	Mar. 7-10
Saginaw, Mich.	Annual Automobile Show	Mar. 7-11
Elizabeth, N. J.	Fifth Annual Show	Mar. 8-17
Huntington, W. Va.	Huntington Automobile Dealers' Assn. Show	Mar. 10-16
Richmond, Va.	Annual Automobile Show	Mar. 10-17
Boston	Annual Automobile Show	Mar. 10-17
Newark, N. J.	Annual Automobile Show	Mar. 10-17
Washington, D. C.	Spring Show, Convention Hall	Mar. 11-17
Denver	Municipal Auditorium	Mar. 11-18
Port Huron, Mich.	Annual Automobile Show	Mar. 12-17
Jacksonville, Ill.	Jacksonville Automobile Dealers' Assn.	Mar. 12-17
Denver, Colo.	Denver Automobile Dealers' Show	Mar. 14-17
Battle Creek, Mich.	Annual Automobile Show	Mar. 19-24
Greenville, S. C.	Annual Automobile Show	Mar. 28-31
Quincy, Ill.	Annual Automobile Show	Mar. 28-Apr. 1
Bridgeton, N. J.	Eighth Annual Automobile Show	Mar. 31-Apr. 7
Alpena, Mich.	Annual Automobile Show	Apr. 2-7
Green Bay, Wis.	Annual Automobile Show	Aug. 27-30
Sacramento	Annual Automobile Show	Sept. 3-8
Memphis	Annual Automobile Show	Sept. 28-30
Fresno, Calif.	Automobile Show	Sept. 28-Oct. 5
Little Rock, Ark.	Annual Automobile Show	Oct. 8-13
Waco, Texas	Waco Automobile Dealers' Assn.	Oct. 20-Nov. 5

CONVENTIONS

Quincy, Ill.	Annual Meeting Illinois Automotive Trade Association	Mar. 19
Olympia, Wash.	Convention Washington Automotive Trade Association	July

RACES

Indianapolis	Annual 500-Mile Classic	May 30
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SQUEEKS & RATTLES

If You Know Any, Tell Them to Us

Help Wanted
By Squeeks & Rattles
Send Us Some

Just His Luck

Mr. Isaacstein approached a taxi driver and asked what would be the fare for himself, his wife and children to a certain address.

The cabby asked \$2.50. Mr. Isaacstein offered to toss the cabby double or quits.

The cabby consented and won the toss, whereupon the would-be passenger turned to his wife and said, in despairing tones:

"Just my luck, Rachel! Now we shall have to walk home!"
—Houston Post.

Neither Idaho nor Montana has anything on Iowa when it comes to road signs. Out our way we have a sign near one of our rural school houses which reads: "SCHOOL, SLOW DOWN, YOU MAY MEET A FOOL." We keep our educational standards high.—Butch.

"The road to the police court," said the motorist, "is paved with good pedestrians."

I seen yure ad. askeing fore help in yure Squeeks & Rattles Department and want you too printe thes in yure neggst magazine.

1—What car reminds you off somethinge that to dozen botels uset to cume in? (Case)

2—What car reminds you off somethinge you haf a hot time gettin an a cold time gettin along witheout? (Cole)

3—What car reminds you off a river that prevents Jersey-ites frum beeing ressidantz of New Yorke City? (Hudson)

4—What car reminds you off a ice creme freazer? (Packard)

Yours trueley,

BOOB McNUTT.

M. C. V. tells what a sheet of paper represents in automobile names—Paige, of course—and asks what car is called by the same name as a river in the Bible?

FABLE

(Gathered by Timely Films)

Once upon a time an automobile tourist passed two farmers who agreed concerning the distance to the next town.—Elizabeth, N. J., Journal.

A writer to the Readers' Clearing House says, "I have been having trouble with a car that I am unable to locate." We would suggest that the gentleman locate the car and then our Clearing House Editor will help him do away with the trouble.

Specifications of Current Motor Truck Models

NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive			
				Front	Rear					Front	Rear					Front	Rear			
Ace.....30	11-11	\$2400	3 1/2 x 5	34x3 1/2	34x6	W	Corbitt.....B-22	2 1/2	\$3000	4 1/2 x 5 1/2	36x4	36x7	W	Gersix.....K	2 1/2	\$3500	4 1/2 x 5 1/2	36x4	36x8	W
Ace.....40	2	2850	4 1/2 x 5 1/2	36x4	36x7	W	Corbitt.....R-22	3	3200	4 1/2 x 5 1/2	36x4	36x8	W	Gersix.....20	1	4500	4 1/2 x 6	36x5	40x12	W
Ace.....60	2 1/2-3	3400	4 1/2 x 5 1/2	36x4	36x8	W	Corbitt.....AA-22	3 1/2-4	3800	4 1/2 x 5 1/2	36x5	36x10	W	Gotfredson.....31	1 1/2-2	2075	3 1/2 x 5 1/2	34x5	34x5	W
Acme.....20	1	.....	3 1/2 x 5	35x5 1/2	35x5 1/2	W	Corbitt.....AA-22	5	4500	4 1/2 x 6	36x6	40x6d	W	Gotfredson.....31	1 1/2-2	3000	4 x 5 1/2	36x6	36x7 1/2	W
Acme.....30	1 1/2	.....	3 1/2 x 5	34x3 1/2	34x5	W	Day-Elder.....AS	1	1600	3 1/2 x 3	35x5 1/2	35x5 1/2	W	Gotfredson.....A	2 1/2	3375	4 x 5 1/2	36x4	36x7	W
Acme.....40	2	.....	3 1/2 x 5	34x3 1/2	34x5	W	Day-Elder.....B	1 1/2	2000	3 1/2 x 3 1/2	34x3 1/2	34x5	W	Gotfredson.....B	3 1/2-4	4475	4 1/2 x 5 1/2	36x5	36x10	W
Acme.....60	3	.....	4 1/2 x 5 1/2	36x4	36x7	W	Day-Elder.....D	2	2400	4 1/2 x 5 1/2	36x4	36x7	W	Gotfredson.....100	5-6	5500	5 x 6 1/2	36x6	40x14	W
Acme.....90	4 1/2	.....	4 1/2 x 5 1/2	36x5	40x10	W	Day-Elder.....E	3 1/2	2750	4 1/2 x 5 1/2	36x4	36x7	W	Graham Bros.....1	1	1265	3 1/2 x 4 1/2	33x4 1/2	34x5 1/2	B
Acme.....125	6 1/2	.....	4 1/2 x 6	36x6	40x12	W	Day-Elder.....F	5	3150	4 1/2 x 5 1/2	36x5	36x5d	W	Graham Bros.....1 1/2	1 1/2	1325	3 1/2 x 4 1/2	33x4 1/2	36x6 1/2	B
American.....25	2 1/2	3350	4 x 6	36x4 1/2	36x4 1/2	W	Day-Elder.....G	5	4250	4 1/2 x 6	36x5 1/2	40x6d	W	Gramm-Pion.....10	1	1245	3 1/2 x 5	33x5 1/2	33x5 1/2	B
American.....40	4	4275	4 1/2 x 6	36x5 1/2	36x5 1/2	W	Day-Elder.....H	5	4250	4 1/2 x 6	36x5 1/2	40x6d	W	Gramm-Pion.....15	1 1/2-2	1750a	3 1/2 x 5	36x3 1/2	36x5 1/2	I
American.....50	5	4500	4 1/2 x 6	36x5	36x12	W	Dearborn.....E	1	1600	3 1/2 x 5 1/2	35x5 1/2	35x5 1/2	W	Gramm-Pion.....65	1 1/2-2	2250a	3 1/2 x 5	36x3 1/2	36x5	W
Armleder.....20	1	.....	3 1/2 x 5 1/2	34x3 1/2	34x6	W	Dearborn.....E	1	1600	3 1/2 x 5 1/2	35x5 1/2	35x5 1/2	W	Gramm-Pion.....20	2-2 1/2	2475a	4 1/2 x 5 1/2	36x4 1/2	36x7 1/2	W
Armleder.....21	1 1/2	.....	3 1/2 x 5 1/2	34x3 1/2	34x6	W	Dearborn.....FX	1 1/2	2300	3 1/2 x 5 1/2	34x4	34x5	W	Gramm-Pion.....30	3	3300a	4 1/2 x 5 1/2	36x5 1/2	36x5 1/2	W
Armleder.....40-B	1 1/2	.....	4 1/2 x 5 1/2	34x3 1/2	34x6	W	Dearborn.....F	1 1/2	2180	3 1/2 x 5 1/2	34x4	34x5	W	Gramm-Pion.....75P	3 1/2	4225a	4 1/2 x 5 1/2	36x6 1/2	42x9 1/2	W
Armleder.....40-C	1 1/2	.....	4 1/2 x 5 1/2	34x3 1/2	34x6	W	Dearborn.....G	2	2590	3 1/2 x 5 1/2	34x4 1/2	34x7	W	Gramm-Pion.....40	4	3850a	4 1/2 x 5 1/2	36x5	36x5d	W
Armleder.....HW-B	2 1/2	.....	4 1/2 x 5 1/2	36x4 1/2	36x7 1/2	W	Defiance.....8	1	1525	3 1/2 x 5	35x5 1/2	35x5 1/2	B	Gramm-Pion.....50	5-6	4450a	4 1/2 x 6	36x6	40x6d	W
Armleder.....HW-C	2 1/2	.....	4 1/2 x 5 1/2	36x4 1/2	36x7 1/2	W	Defiance.....D	1 1/2	1845	3 1/2 x 5	35x5 1/2	38x6 1/2	I	Hall.....1 1/2	1 1/2	3100	3 1/2 x 5	34x5 1/2	38x7 1/2	W
Armleder.....KW-B	3 1/2	.....	4 1/2 x 6	36x5 1/2	36x5 1/2	W	Defiance.....E	2	2075	3 1/2 x 5	35x5 1/2	38x7 1/2	I	Hall.....2 1/2	2 1/2	3275	4 1/2 x 5 1/2	36x4	36x6	W
Armleder.....KW-C	3 1/2	.....	4 1/2 x 6	36x5 1/2	36x5 1/2	W	Denby.....31	1 1/2	1485	3 1/2 x 5	35x5 1/2	35x5 1/2	B	Hall.....3 1/2	3 1/2	4100	4 1/2 x 5 1/2	36x5	36x5 1/2	W
*Atlas.....22	1	1495	3 1/2 x 5 1/2	34x4 1/2	34x4 1/2	W	Denby.....33	1 1/2	2145	4 1/2 x 5	35x5 1/2	38x7 1/2	I	Hall.....5	5	5100	4 1/2 x 5 1/2	36x5	40x6d	W
*Atlas.....44	1 1/2-2	1950	3 1/2 x 5 1/2	36x6 1/2	36x6 1/2	W	Denby.....35	2 1/2-3	2795	4 1/2 x 5 1/2	36x6	40x6d	I	Hall.....7 chain	7	5100	4 1/2 x 5 1/2	36x5	40x6d	C
Atterbury.....20R	1 1/2	2475	3 1/2 x 5	34x3 1/2	34x5	W	Dependable.....A	1 1/2-1	1650	3 1/2 x 5 1/2	34x5 1/2	36x6 1/2	W	Harvey.....W OA	2	2650	4 1/2 x 5 1/2	36x4	36x7	W
Atterbury.....22C	2 1/2	3375	3 1/2 x 5 1/2	36x4	36x4d	W	Dependable.....C	2	2350	3 1/2 x 5 1/2	34x3 1/2	34x5	W	Harvey.....WFA	2 1/2	2950	4 1/2 x 5 1/2	36x4	36x7	W
Atterbury.....22C	2 1/2	3475	3 1/2 x 5 1/2	36x4	36x4d	W	Dependable.....E	3	2650	4 x 5 1/2	34x5	36x6	W	Harvey.....WHA	3 1/2	3950	4 1/2 x 6	36x5	36x5d	W
Atterbury.....22D	3 1/2	4275	4 1/2 x 5 1/2	36x5	40x5d	W	Dependable.....E	3	2650	4 1/2 x 5 1/2	36x4	36x7	W	Hawkeye.....O	1	1375	3 1/2 x 5 1/2	34x5 1/2	34x5 1/2	I
Atterbury.....22D	3 1/2	4375	4 1/2 x 5 1/2	36x5	40x5d	W	Diamond T.....O-31	1-1 1/2	1975	3 1/2 x 5 1/2	36x3 1/2	36x4 1/2	W	Hawkeye.....K	1 1/2	1645	3 1/2 x 5 1/2	34x3 1/2	34x5 1/2	I
Atterbury.....8E	5	4975	4 1/2 x 6	36x5	40x6d	W	Diamond T.....T	1 1/2	2250	3 1/2 x 5 1/2	36x3 1/2	36x5	W	Hawkeye.....M	2	2145	4 1/2 x 5	36x4 1/2	36x6 1/2	I
Atterbury.....8E	5	5125	4 1/2 x 6	36x5	40x6d	W	Diamond T.....U	2-2 1/2	2650	4 x 5 1/2	36x4	36x7	W	Hawkeye.....N	3 1/2	3700	4 1/2 x 5 1/2	36x5 1/2	36x5 1/2	I
Autocar.....21UF	1 1/2-2	2200	4 1/2 x 4 1/2	34x4 1/2	34x6	D	Diamond T.....K	3 1/2	3750	4 1/2 x 5 1/2	36x5	36x5d	W	Hendrickson.....O	1 1/2	2200	3 1/2 x 5 1/2	36x4 1/2	36x5 1/2	W
Autocar.....21UG	1 1/2-2	2300	4 1/2 x 4 1/2	34x4 1/2	34x6	D	Diamond T.....EL	5	4325	4 1/2 x 5 1/2	36x6	40x6d	W	Hendrickson.....N	2 1/2	2690	4 1/2 x 5 1/2	36x5 1/2	36x5 1/2	W
Autocar.....27H	2-3	3100	4 x 5 1/2	34x5	36x7	D	Diamond T.....S	5	4500	4 1/2 x 5 1/2	36x6	40x6d	W	Hendrickson.....M	3 1/2	3000	4 1/2 x 5	36x5 1/2	36x5 1/2	W
Autocar.....27K	2-3	3200	4 x 5 1/2	34x5	36x7 1/2	D	Deane.....2 1/2	2 1/2	4100b	4 1/2 x 5 1/2	36x5	36x7	C	Hendrickson.....K	5	4000	5 x 6 1/2	36x6	40x6	W
Autocar.....26Y	4-6	4200	4 1/2 x 5 1/2	36x6	36x12	D	Deane.....3 1/2	3 1/2	5100b	4 1/2 x 5 1/2	36x5	36x5d	C	Huffman.....B	1 1/2-2	1795	3 1/2 x 5	34x3 1/2	34x6	W
Autocar.....26-B	4-6	4350	4 1/2 x 5 1/2	36x6	36x12	D	Deane.....6	6	6000b	5 x 6 1/2	36x6	40x6d	C	Huffman.....C	1 1/2-2	1895	3 1/2 x 5 1/2	36x3 1/2	36x6	I
Available.....H1	1 1/2	2475	4 x 5	36x3 1/2	36x5 1/2	W	*Dodge Brothers.....3 1/2	3 1/2	730	3 1/2 x 4 1/2	32x4 1/2	32x4 1/2	B	Huffman.....D	2-3	2895	4 1/2 x 5 1/2	36x4	36x7	W
Available.....H2	2 1/2	2775	4 x 5	36x3 1/2	36x6 1/2	W	Dorris.....K-2	1	2490	4 x 5 1/2	33x5 1/2	33x5 1/2	B	Hurlburt.....A-A	1-1 1/2	1950	3 1/2 x 5	34x5 1/2	34x5 1/2	W
Available.....H2 1/2	2 1/2	3160	4 x 5	36x4 1/2	36x8 1/2	W	Dorris.....K-4	2-2 1/2	3400	4 1/2 x 5 1/2	36x4	36x7	W	Hurlburt.....B-B	2-2 1/2	2800	4 1/2 x 5 1/2	36x5	36x5d	W
Available.....H3 1/2	3 1/2	4175	4 1/2 x 5 1/2	36x5	40x5d	W	Dorris.....K-7	3 1/2	4400	4 1/2 x 5 1/2	36x5	36x10	W	Hurlburt.....C-C	3-3 1/2	3475	4 1/2 x 5 1/2	36x5	36x5d	W
Available.....H5	5	5375	5 x 6	36x6	40x12	W	*Dort.....103	1	685a	4 1/2 x 5 1/2	31x4 1/2	34x4 1/2	B	Hurlburt.....D-D	4-4 1/2	4150	4 1/2 x 6	36x5	36x6d	W
*Avery.....1	.....	.....	3 x 4 1/2	34x5 1/2	34x5 1/2	I	Duplex.....A	2	2775	4 x 5 1/2	35x5 1/2	38x7 1/2	W	Hurlburt.....E-E	6-6 1/2	4850	4 1/2 x 6 1/2	36x6	40x6d	W
Beck.....A Jr.	1 1/2	1285a	3 1/2 x 5	34x4 1/2	34x4 1/2	I	Duplex.....E	3 1/2	3500	4 1/2 x 5 1/2	36x6	36x6	W	Indep'd't (Iowa) B	1	1665	3 1/2 x 5	34x3 1/2	34x4	I
Beck.....B-30	1 1/2	1350	3 1/2 x 5	34x5	36x6	I	Duty.....22	2	1590	3 1/2 x 5	34x3 1/2	34x5	I	Indep'd't (Iowa) G	1 1/2	2040	3 1/2 x 5 1/2	34x3 1/2	34x5	I
Beck.....C-40	2 1/2	1550	3 1/2 x 5	36x6	36x6	I	Eagle.....101	1 1/2	1875	3 1/2 x 5 1/2	34x5	34x5	I	Indep'd't (Ia.) HI	2 1/2	2940	4 1/2 x 5 1/2	36x4	36x7	I
Beck.....D-50	2 1/2	1950	4 1/2 x 5 1/2	38x7	40x8	I	Eagle.....100-2	2	2275	3 1/2 x 5 1/2	34x4 1/2	34x7 1/2	I	*Indiana.....10	1	.....	3 1/2 x 5 1/2	34x5 1/2	34x5 1/2	B
Bell.....M (Iowa)	1 1/2	1495	3 1/2 x 5 1/2	35x5	35x5 1/2	W	F. W. D.....B	3	4200	4 1/2 x 5 1/2	36x6	36x6	B	Indiana.....12	1 1/2-2	.....			

Specifications of Current Motor Truck Models—Continued

NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive
				Front Rear						Front Rear						Front Rear	
Kleiber.....BB	2	\$3600	4 1/2 x 5 1/2	36x4k 36x7k	W	Ogden.....A2	1	....	3 1/2 x 5	34x5n 34x5n	W	Selden.....90	5-7 1/2	\$1950	4 1/2 x 6	36x6 40x12	W
Kleiber.....B	2 1/2	3950	4 1/2 x 5 1/2	36x5k 36x8	W	Ogden.....D	1 1/2	....	3 1/2 x 5	36x3 1/2 36x5	W	Seneca.....M	1 1/2	820	3 1/2 x 4 1/2	30x3 1/2 30x3 1/2	B
Kleiber.....C	3 1/2	4600	4 1/2 x 5 1/2	36x5 36x5d	W	Ogden.....E	2 1/2	....	3 1/2 x 5	36x3 1/2 36x4k	W	*Service.....12	1 1/2	....	3 1/2 x 4 1/2	32x4 1/2 32x4 1/2	B
Kleiber.....D	5	5300	5 x 6 1/2	36x6 40x12	W	Old Reliable.....A	1 1/2	\$2350	4 x 5	34x4 36x6	W	*Service.....25	1 1/2	....	3 1/2 x 5 1/2	34x5n 34x5n	B
Koehler.....D	1 1/2	2150	3 1/2 x 5	34x3 1/2 34x5	W	Old Reliable.....B	2 1/2	3500	4 1/2 x 6	34x4 36x4d	W	Service.....21	1 1/2	....	3 1/2 x 5 1/2	34x3 1/2 34x5	W
Koehler.....M	2 1/2	3175	4 x 5 1/2	36x4 36x7	W	Old Reliable.....C	3 1/2	4250	4 1/2 x 6	36x5 36x5d	W	Service.....32	2	....	4 x 5 1/2	36x3 1/2 36x7	W
Koehler.....MCS	2 1/2	3275	4 x 5 1/2	36x4 36x7	W	Old Reliable.....D	5	5000	4 1/2 x 6	36x6 40x6d	W	Service.....34	2	....	4 1/2 x 5 1/2	35x5n 38x7n	W
Koehler.....F	3 1/2	4470	4 1/2 x 5 1/2	36x5 36x10	W	Old Reliable KLM	7	6000	4 1/2 x 6 1/2	36x6 40x7d	W	Service.....52	3	....	4 1/2 x 5 1/2	36x4 36x8	W
Koehler, MT. Trac	5	3275	4 x 5 1/2	36x4 36x7	W	*Oldmobile Econ	1	1095	3 1/2 x 5 1/2	35x5n 35x5n	W	Service.....72	3 1/2	....	4 1/2 x 5 1/2	36x5 36x5d	W
Krebs.....23	3 1/2	1380	3 1/2 x 5	34x4 1/2 34x4 1/2	B	Olympic.....A	2 1/2	3200	4 1/2 x 5 1/2	36x4 36x5	W	Service.....77	4	....	4 1/2 x 6	36x5 36x5d	W
Krebs.....24	1 1/2	1675	3 1/2 x 5	34x5 34x5	W	Oneida.....B9	1 1/2	2825	4 x 5 1/2	36x3 1/2 36x7	W	Service.....102	6	....	4 1/2 x 6	36x6 40x6d	W
Krebs.....45	1 1/2	2275	4 1/2 x 5 1/2	36x4 36x7	W	Oneida.....C9	2 1/2	3200	4 x 5 1/2	36x4 36x8	W	Signal.....NF	1	....	3 1/2 x 5	34x5n 36x6n	W
Krebs.....75	2 1/2	2550	4 1/2 x 5 1/2	36x4 36x8	W	Oneida.....D9	3 1/2	4050	4 1/2 x 5 1/2	36x5 36x10	W	Signal.....H	1 1/2	....	4 1/2 x 5 1/2	34x4 36x6	W
Krebs.....110	3 1/2	3175	4 1/2 x 5 1/2	36x5 40x10	W	Oneida.....E9	5	4725	4 1/2 x 5 1/2	36x6 40x12	W	Signal.....J	2 1/2	....	4 1/2 x 5 1/2	34x4 36x8	W
Krebs.....140	5	....	4 1/2 x 6	36x6 40x15d	W	Oshkosh.....A	2	2485	4 x 5 1/2	36x6n 36x6n	B	Signal.....M	3 1/2	....	4 1/2 x 5 1/2	36x5 40x5d	W
Larrabee.....X-2	1	1925	3 1/2 x 4 1/2	34x5n 34x5n	B	Oshkosh.....AA	2	2585	3 1/2 x 5	36x6n 36x6n	B	Signal.....R	5	....	4 1/2 x 6	36x6 40x6d	W
Larrabee.....U	1 1/2	2400	3 1/2 x 5	34x3 1/2 34x5	W	Oshkosh.....B	2 1/2	3485	4 x 5 1/2	38x7n 38x7n	B	*Standard.....75	1 1/2	1330	3 1/2 x 5	33x5n 33x5n	W
Larrabee.....J	1 1/2	2400	3 1/2 x 5	34x3 1/2 34x5k	W	Oshkosh.....BB	2 1/2	3585	4 x 5 1/2	38x7n 38x7n	B	Standard.....1-K	1 1/2	1600	3 1/2 x 5	34x3 1/2 34x5k	W
Larrabee.....K	2 1/2	3100	4 1/2 x 5 1/2	36x4 36x7	W	*Overland.....4	1 1/2	425	3 1/2 x 4	30x3 1/2 30x3 1/2	B	Standard.....76	1 1/2	2100	4 1/2 x 5 1/2	36x4 36x8	W
Larrabee.....K-S	2 1/2	3450	4 1/2 x 5 1/2	36x4 36x8	W	Packard.....EC	2-3	3100	4 1/2 x 5 1/2	36x4 36x7	W	Standard.....66	1 1/2	3150	4 1/2 x 5 1/2	36x5 36x12	W
Larrabee.....L	3 1/2	4000	4 1/2 x 5 1/2	36x5 36x5d	W	Packard.....EX	2-3 1/2	3100	4 1/2 x 5 1/2	36x6n 40x8n	W	Standard.....5-K	5-7	4400	4 1/2 x 6	36x6 40x14	W
Larrabee.....W	5-7	4800	4 1/2 x 6	36x6 40x6d	W	Packard.....ED	3 1/2	4100	4 1/2 x 5 1/2	36x5 36x5d	W	*Star.....1 1/2	1 1/2	6100	3 1/2 x 4 1/2	30x3 1/2 30x3 1/2	W
Massey.....L	1 1/2	....	4 1/2 x 5 1/2	36x4 36x6	W	Packard.....EF	5-7 1/2	4500	5 x 5 1/2	36x6 40x6d	W	Sterling.....1 1/2	1 1/2	2885	4 x 5 1/2	36x3 1/2 36x5k	W
Massey.....H-A	2	....	4 1/2 x 5 1/2	36x4 36x4d	W	Paige.....52-19	1 1/2	1950	4 x 5 1/2	34x3 1/2 34x5	W	Sterling.....2	2	3085	4 x 5 1/2	36x4k 36x6k	W
Massey.....H-2	3	....	4 1/2 x 5 1/2	36x4 36x5d	W	Paige.....54-20	2 1/2	2420	4 1/2 x 5 1/2	34x4 34x8	W	Sterling.....2 1/2	2 1/2	3290	4 1/2 x 5 1/2	36x4k 36x4dk	W
Massey.....M-3	4	....	4 1/2 x 5 1/2	36x5 36x6d	W	Paige.....51-18	3 1/2	3145	4 1/2 x 5 1/2	36x5 36x5d	W	Sterling.....3 1/2	3 1/2	4325	4 1/2 x 5 1/2	36x5k 40x5dk	W
Massey.....G	5-6	....	4 1/2 x 6	36x5 40x6d	W	Parker.....C-22	1	1875	3 1/2 x 5 1/2	34x4 34x5n	W	Sterling.....5-W	5	4950	5 x 6 1/2	36x6 40x6d	W
MacDonald.....A	7 1/2	5750	4 1/2 x 6	40x7 40x14	I	Parker.....G-22	2 1/2	3200	4 1/2 x 6	36x4 36x5d	W	Sterling.....5-C	5	5500	5 x 6 1/2	36x6 40x6d	C
Mack.....AB D.R.	1 1/2	3450	4 x 5	36x4k 36x3 1/2 36x4k	D	Parker.....J-20	3 1/2	3950	5 x 6	36x6 40x6d	W	Sterling.....7 1/2	7 1/2	6000	5 x 6 1/2	36x6 40x7d	C
Mack.....AB Chain	2	3300	4 x 5	36x4k 36x3 1/2 36x4k	C	Parker.....M-20	5	4850	5 x 6	36x6 40x6d	W	*Stewart.....Utility	1 1/2	1215	3 1/2 x 5 1/2	34x4 36x4	I
Mack.....AB D.R.	2 1/2	3750	4 1/2 x 5	36x4k 36x4dk	D	Patriot.....Reverse	1	1380	3 1/2 x 5 1/2	35x5n 35x5n	W	Stewart.....15	1 1/2	1445	3 1/2 x 5 1/2	35x5n 35x5n	I
Mack.....AB D.R.	2 1/2	3850	4 1/2 x 5	36x4k 36x4dk	D	Patriot.....Lincoln	2	2050	4 x 5 1/2	34x4 34x6	W	Stewart.....7-X	7	2330	4 1/2 x 5 1/2	34x4 34x8	I
Mack.....AB Chain	2 1/2	3400	4 1/2 x 5	36x4k 36x4dk	C	Patriot.....LS-800	2	2175	4 x 5 1/2	36x5 36x7	W	Stewart.....10-X	10	3190	4 1/2 x 6	36x5 36x10	I
Mack.....AC Chain	2 1/2	4950	5 x 6	36x5k 40x5dk	C	Pierce-Arrow.....3	3	2900	4 1/2 x 5 1/2	36x5 36x7	W	*Stoughton.....C	3 1/2	1095	3 1/2 x 5	34x4 36x4	B
Mack.....AC Chain	5	5500	5 x 6	36x6 40x6d	C	Pierce-Arrow.....3 1/2	3 1/2	3200	4 x 5 1/2	36x4 36x4d	W	Stoughton.....A	1	1790	3 1/2 x 5 1/2	34x5n 34x5n	W
Mack.....AC Chain	6 1/2	5750	5 x 6	36x6 40x12	C	Pierce-Arrow.....5	5	4380	4 1/2 x 6 1/2	36x5 36x5d	W	Stoughton.....D	2	2150	3 1/2 x 5 1/2	36x3 1/2 36x5	W
Mack.....AC Chain	7 1/2	6000	5 x 6	36x7 40x7d	C	Pierce-Arrow.....15-2	15-2	4850	4 1/2 x 6 1/2	36x5 40x6d	W	Stoughton.....F	3	2490	4 x 5 1/2	36x4 36x7	W
Mack Trac.....AB	5	3400	4 1/2 x 5	36x4 36x4d	C	Pittsburgher.....3	3	3800	4 1/2 x 5 1/2	36x5k 36x7	W	Stoughton.....H	3 1/2	3150	4 1/2 x 5 1/2	36x5d 36x5d	W
Mack Trac.....AC	7	4550	5 x 6	36x5 40x5d	C	Power.....F	2	3150	4 x 5 1/2	36x5 36x7	W	Sullivan.....E	2	2800	4 1/2 x 5 1/2	36x4k 36x7k	W
Mack Trac.....AC	10	5900	5 x 6	36x6 40x6d	C	Power.....C	3 1/2	....	4 1/2 x 5 1/2	36x5 40x10	W	Sullivan.....H	3 1/2	3750	4 1/2 x 6	36x5 36x5d	W
Mack Trac.....AC	13	5750	5 x 6	36x6 40x12	C	Promocar.....B-143	1 1/2	2475	3 1/2 x 5	36x5n 36x6n	W	*Thomart.....	1 1/2	1795	4 x 5 1/2	34x5 34x5	C
Mack Trac.....AC	15	6000	5 x 6	36x7 40x7d	C	*Rainier.....R-21	1 1/2	....	3 1/2 x 5	35x5n 35x5n	W	Tiffin.....GW	1 1/2	2100	4 1/2 x 5 1/2	36x3 1/2 36x5	W
*Mapleleaf.....	1 1/2	3000	3 1/2 x 5 1/2	34x5n 36x6n	W	Rainier.....R-29	1	....	3 1/2 x 5	34x3 1/2 34x4	W	Tiffin.....MW	2 1/2	2700	4 1/2 x 5 1/2	36x4 36x3 1/2 d	W
Mapleleaf.....AA**	2	3600	4 x 5 1/2	36x4 36x7	W	Rainier.....R-26	1 1/2	....	3 1/2 x 5	34x3 1/2 34x5	W	Tiffin.....PW	3 1/2	3600a	4 1/2 x 5 1/2	36x5 40x5d	W
Mapleleaf.....BB**	3	4050	4 1/2 x 5 1/2	36x4 36x4d	W	Rainier.....R-25	2	....	4 1/2 x 5 1/2	34x4 34x6	W	Tiffin.....UW	6	4500	4 1/2 x 6	36x6 40x6d	W
Mapleleaf.....CC**	4	4800	4 1/2 x 5 1/2	36x5 36x5d	W	Rainier.....R-20	2 1/2	....	4 1/2 x 5 1/2	34x4 34x7	W	Titan.....	2	2750	4 x 5	36x4k 36x7k	D
Mapleleaf.....DD**	5	5625	4 1/2 x 5 1/2	36x6 40x6d	W	Rainier.....R-15	3 1/2	....	4 1/2 x 5 1/2	36x5 36x5d	W	Titan.....2 1/2	2 1/2	2700	4 1/2 x 5 1/2	36x4k 36x8k	D
Mason.....	1	1200	4 x 5	34x5n 34x5n	B	Rainier.....R-15 1/2	3 1/2	....	4 1/2 x 5 1/2	36x5 36x5d	W	Titan.....3 1/2	3 1/2	3630	4 1/2 x 6	36x5k 40x10k	D
Master.....JW	1 1/2	2290	4 1/2 x 5 1/2	34x3 1/2 34x5	W	Rainier.....R-25 1/2	3 1/2	....	4 1/2 x 5 1/2	36x5 36x5d	W	Titan.....5	5	4100	4 1/2 x 6	36x5 40x12	D
Master.....JD	1 1/2	2590	4 1/2 x 5 1/2	34x3 1/2 34x6	D	Rainier.....R-17	5-6	....	4 1/2 x 6	36x6 40x6d	W	Tower.....J	1 1/2	2000	4 1/2 x 5 1/2	35x5n 38x7n	W
Master.....Z	2	2290	4 1/2 x 5 1/2	34x3 1/2 34x5	D	Rainier.....R-27	6	....	4 1/2 x 6	36x6 40x6d	W	Tower.....H	2 1/2	2175	4 1/2 x 5 1/2	36x4 36x7	W
Master.....W	2 1/2	2890	4 1/2 x 5 1/2	34x3 1/2 34x6	W	Ranger.....TK-20-2	1 1/2	1450	3 1/2 x 5	36x6n 38x7n	B	Tower.....G	3 1/2	3475	4 1/2 x 5 1/2	36x5 36x5d	W
Master.....DD	2 1/2	3190	4 1/2 x 5 1/2	34x4 36x7	D	*Reo.....F	1 1/2	1185	3 1/2 x 4 1/2	34x4 1/2 34x4 1/2	B	Traffic.....	1 1/2	1595a	3 1/2 x 5	35x5n 35x5n	I
Master.....A	3 1/2	3990	4 1/2 x 6	36x5 40x8	D	Reliance.....10A	1 1/2	2400	4 x 5 1/2	36x3 1/2 36x5	I	Traffic.....C	2	1955a	3 1/2 x 5	34x2 1/2 34x5k	I
Master.....E	3 1/2	4290	4 1/2 x 6	36x5 40x5d	D	Reliance.....20B	2 1/2	3100	4 1/2 x 5 1/2	36x4 36x4d	I	Traffic.....3	3	1955a	3 1/2 x 5	36x4 36x7	I
Master.....Y	4	4490	4 1/2 x 6	36x5 40x6d	D	Republic.....75	3 1/2	1395b	3 1/2 x 5	36x4 36x4d	I	*Transport.....15	1 1/2	1235	3 1/2 x 5	32x4 1/2 32x4 1/2	B
Master.....F	5	4990	4 1/2 x 6	36x6 40x6d	D	Republic.....10	1	1395	3 1/2 x 5	34x3 34x4	I	Transport.....25	1 1/2	1195	3 1/2 x 5 1/2	34x3 1/2 34x4k	I
Master Trac.....DDT	6	3390	4 1/2 x 5 1/2	34x4 36x7	D	Republic.....10 1/2	1 1/2	1695	3 1/2 x 5	34x3 34x5n	I	Transport.....35	2	1355a	3 1/2 x 5 1/2	36x3 1/2 36x6k	I
*Maxwell.....	1 1/2	832	3 1/2 x 4 1/2	32x3n 32x4n	W	Republic.....11X	1 1/2	1795	3 1/2 x 5	34x4 34x6	I	Transport.....55	3	2335	4 1/2 x 5 1/2	36x4k 36x8k	I
*Menominee.....	1	1650	4 x 5	34x5n 34x5n	W	Republic.....19	2 1/2	2195	4 1/2 x 5 1/2	36x4 36x7	I	Transport.....60	3 1/2	2535	4 1/2 x 5 1/2	36x5k 36x8k	I
Menominee.....HT	1-1 1/2	2000	3 1/2 x 5	34x3 1/2 36x5	W	Republic.....20	3 1/2	3065	4 1/2 x 5 1/2	36x5 36x10	I	Transport.....75	5	3185	4 1/2 x 6	36x5k 36x12k	I
Menominee.....H	1 1/2	2475	4 x 5	36x3 1/2 36x5	W	Rowe.....CW	1 1/2	3000	3 1/2 x 5	36x6n 36x6n	W						

Specifications of Current Motor Truck Models—Continued

NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES		Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES		Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES		Final Drive
				Front	Rear						Front	Rear						Front	Rear	
Veteran.....P**	2	\$3699	4 1/2 x 5 1/2	36x4	36x7	W	White.....20	2	\$3250	3 1/2 x 5 1/2	36x4k	36x7k	D	Wilcox.....AA	1	\$1900	3 1/2 x 5 1/2	36x4k	36x4k	W
Veteran.....R**	3	4200	4 1/2 x 5 1/2	36x4	36x7	W	White.....40	3 1/2	4200	3 1/2 x 5 1/2	36x5	40x5d	D	Wilcox.....BB	1 1/2	2550	4 1/2 x 5	36x4	36x5	W
Veteran.....S**	4	5395	4 1/2 x 6	36x5	36x10	W	White.....45	5	4500	4 1/2 x 5 1/2	36x6	40x6d	D	Wilcox.....D	2 1/2	3000	4 1/2 x 5	36x4k	36x3 1/2 k	W
*Vim.....50	1 1/2-3 1/2	995	4 x 5	32x4n	32x4n	B	Wichita.....K	1	1875	3 1/2 x 5 1/2	36x3 1/2	36x4k	W	Wilcox.....E	3 1/2	3950	4 1/2 x 5	36x5k	36x5d	W
Walker-JohnsonA	2	2500	3 1/2 x 5	34x3 1/2	34x6	W	Wichita.....M	2	2400	3 1/2 x 5 1/2	36x3 1/2 k	36x6k	W	Wilcox.....F	5	4350	4 1/2 x 5 1/2	36x5	40x6d	W
Walker-JohnsonB	3	3000	4 1/2 x 5 1/2	36x4	36x8	W	Wichita.....RX	3	3200	4 1/2 x 5 1/2	36x4k	36x8k	W	Wilson.....F	1 1/2	2270	3 1/2 x 5	36x3 1/2	36x5	W
Walter.....M	2 1/2	3850	4 1/2 x 5 1/2	36x4	36x8	D	Wichita.....O	4	3500	4 1/2 x 5 1/2	36x5k	36x5k	W	Wilson.....EA	2 1/2	2825	4 1/2 x 5 1/2	36x4	36x7	W
Walter.....S	5	4850	4 1/2 x 5 1/2	36x6	40x6d	W								Wilson.....G	3 1/2	3685	4 1/2 x 5 1/2	36x5	36x5	W
*Watson.....C	1	1405n	3 1/2 x 5 1/2	35x5n	35x5n	W								Wilson.....H	5	4520	4 1/2 x 6	36x6	40x6	W
Watson.....N	3 1/2	4250	4 1/2 x 5 1/2	36x5	36x10	W								*Wisconsin.....A	1	1750	3 1/2 x 5	34x5n	34x5n	W B
Western.....W1 1/2	1 1/2	2450	3 1/2 x 5 1/2	36x3 1/2 k	36x5k	W								Wisconsin.....B	1 1/2	2100	3 1/2 x 5	35x5	36x6	W
Western.....L1 1/2	1 1/2	2450	3 1/2 x 5 1/2	36x3 1/2 k	36x5k	W								Wisconsin.....C	2 1/2	2700	4 x 5 1/2	36x6n	36x7	W
Western.....W2 1/2	2 1/2	3250	4 1/2 x 5 1/2	36x4	36x7	W								Wisconsin.....D	3 1/2	3000	4 1/2 x 5 1/2	36x6n	40x8	W
Western.....L2 1/2	2 1/2	2450	4 1/2 x 6	36x4	36x7	W								Wisconsin.....E	5	3500	4 1/2 x 5 1/2	36x6	36x10	W
Western.....W3 1/2	3 1/2	4000	4 1/2 x 6	36x5	40x5d	W								Wisconsin.....F	7	4000	5 x 6 1/2	36x6	36x12	W
*White.....15	3 1/2	2400	3 1/2 x 5 1/2	34x5n	34x5n	B								Witt-Will.....N	1 1/2	2450-	3 1/2 x 5	36x3 1/2 k	36x6k	W
														Witt-Will.....P	2 1/2	2900	4 1/2 x 5 1/2	36x4k	36x8k	W

FINAL DRIVE: B—Bevel, C—Chain, D—Double Reduction, I—Internal Gear, W—Worm.

r—8 cyl. s—6 cyl. t—2 cyl.—all others are 4 cyl. d—dual tires. k—pneumatic tires optional at extra cost. n—pneumatic tires. a—price includes several items of equipment. b—price includes body. *—express truck or delivery wagon. **—Canadian Make. trac.—tractor.

Specifications of Current Farm Tractor Models

TRADE NAME	Rating	Price	Wheels or Crawlers	Engine	Cylinders; Bore, Stroke	Fuel	Plow Capacity	TRADE NAME	Rating	Price	Wheels or Crawlers	Engine	Cylinders; Bore, Stroke	Fuel	Plow Capacity	TRADE NAME	Rating	Price	Wheels or Crawlers	Engine	Cylinders; Bore, Stroke	Fuel	Plow Capacity
Allis-Chal.G.P.	6-12	\$295	2	LeR.	4-3 1/2 x 4 1/2	Gas.	1	Gray.....	18-36	1975	3	Wauk.	4-4 1/2 x 6 1/2	Gas.	4	OilPull.....E	30-60	4	Own	2-10x12	K,D	8-10
Allis-Chalm.	15-25	1185	4	Midw.	4-4 1/2 x 5 1/2	Gas.	3-4									*Oldsmar...K	2 1/2-5	\$225	4	Own	1-5 1/2 x 5 1/2	Gas.	1
Allis-Chalm.	20-35	1885	4	Own	4-4 1/2 x 6 1/2	GorK	3-4																
Allwork.....2-G	14-28	1595	4	Own	4-4 1/2 x 6	GorK	3																
Allwork.....C	14-28	1293	4	Own	4-5 x 6	GorK	3																
*ARO.1921-22	3-6	385	4	Own	1-4 1/2 x 5 1/2	Gas.	1	Hart-Parr.....20	20	.....	4	Own	2-5 1/2 x 6 1/2	K,D	2							
Aultman-T.	15-30	4	Clim.	4-5 x 6 1/2	G,K,D	4	Hart-Parr.....30	30	4	Own	2-6 1/2 x 7	K,D	3	Pioneer.....G	18-36	4	Own	4-5 1/2 x 6	G,K,D	4
Aultman-T.	22-45	4	Own	4-5 1/2 x 8	G,K,D	6	Hart-Parr.....30	30	4	Own	2-6 1/2 x 7	K,D	3	Pioneer.....C	40-75	4	Own	4-7 x 8	Gas.	10
Aultman-T.	30-60	.....	4	Own	4-7 x 9	G,K,D	8-10	Heider.....D	9-16	628	4	Wauk.	4-4 1/2 x 5 1/2	G,K	2							
Avery,S.R.Cul.	5-10	.....	4	Own	4-3 x 4	G,K	1	Heider.....C	12-20	725	4	Wauk.	4-4 1/2 x 6 1/2	G,K	3							
Avery Cult-C	.....	.....	3	Own	6-3 x 4	G,K	1	Heider.....Cult	5-10	.....	4	LeR.	4-3 1/2 x 4 1/2	Gas.	1							
Avery.....C	.....	.....	4	Own	6-3 x 4	G,K	1	Huber Light 4	12-25	985	4	Wauk.	4-4 1/2 x 5 1/2	GorK	3							
Avery.....	.....	.....	4	Own	4-4 1/2 x 5 1/2	G,K,D	3-4	Huber Super 4	15-30	.....	4	Midw.	4-4 1/2 x 6	Gas.	3							
Avery.....	12-25	.....	4	Own	2-6 1/2 x 7	G,K,D	2-3															
Avery.....	14-28	.....	4	Own	4-4 1/2 x 6 1/2	G,K,D	3-4															
Avery.....	18-30	.....	4	Own	4-5 1/2 x 6	G,K,D	4-5															
Avery.....	25-30	.....	4	Own	4-6 1/2 x 7	G,K,D	5-6															
Avery.....	45-65	.....	4	Own	4-7 1/2 x 8	G,K,D	8-10															
								Internatinal.	8-16	.....	4	Own	4-4 1/2 x 5	G,K,D	2							
								Internat. Titan	10-20	.....	4	Own	2-6 1/2 x 8	G,K,D	3							
								Internatinal.	15-30	.....	4	Own	4-5 1/2 x 8	G,K,D	4							
Bates All-Stid	15-25	.....	4	Own	4-4 1/2 x 6	Gas.	3															
Bates Mule. H	15-25	.....	4	Midw.	4-4 1/2 x 5 1/2	Gas.	3															
Bates Mule. F	18-25	.....	4	Midw.	4-4 1/2 x 5 1/2	Gas.	3	*Kinkade....	1 1/2-3	190	1	Own	1-3 x 3	Gas.	.....							
Bates Mule. G	25-35	.....	4	Midw.	4-4 1/2 x 6	Gas.	4															
Bear.....	25-35	.....	4	Own	4-4 1/2 x 6 1/2	Gas.	4															
*Beeman Jr.	3 1/2-1 1/2	180	2	B&S	1-2 1/2 x 2 1/2	Gas.	.....															
*Beeman, G	2-4	240	4	Own	1-3 1/2 x 4 1/2	Gas.	.....															
Best.....30	18-30	.....	4	Own	4-4 1/2 x 6 1/2	G,K,D	4	La Crosse.....	6-12	.....	4	Own	2-4 x 6	G,K	1							
Best.....60	35-55	.....	4	Own	4-6 1/2 x 8 1/2	G,K,D	8-9	La Crosse.....	12-24	.....	2	Own	2-6 x 7	G,K	3							
*Bolens.....	.....	.....	4	B&S	1-2 1/2 x 2 1/2	G,K	.....	Lauson.....5	12-25	1295	4	Midw.	4-4 1/2 x 5 1/2	Gas.	3							
*Bryan.....	15-30	2500	4	Own	2-4 x 5	K	3	Lauson.....21	15-30	1675	4	Beav.	4-4 1/2 x 6	GorK	3-4								
								Leader.....B	12-13	.....	4	Own	2-6 x 6 1/2	G,K,D	2-3							
								Leader.....N	16-32	.....	4	Clim.	4-5 x 6	G,K	3-4							
								Leader.....GU	18-35	.....	4	Clim.	4-5 x 6	G,K	3-4							
								Lincoln.....	15-30	1600	4	Buda	4-4 1/2 x 6	G,K	3								
								Little Giant. B	16-22	.....	4	Own	4-4 1/2 x 5	K	4							
								Little Giant. A	26-35	.....	4	Own	4-5 1/2 x 6	K	6							
								Lombard. 1922	100	.....	4	Wisc.	6-5 1/2 x 7	Gas.	16							
Case.....	12-20	1050	4	Own	4-4 1/2 x 5	G,K,D	2-3																
Case.....	15-27	1320	4	Own	4-4 1/2 x 6	G,K,D	3-4																
Case.....	22-40	2550	4	Own	4-5 1/2 x 6 1/2	G,K,D	4-5																
Case.....	40-72	5200	4	Own	7 x 8	G,K,D	8-10																
Caterpillar T11	25	.....	4	Own	4-4 1/2 x 6	Gas.	4															
Caterpillar T16	40	.....	4	Own	4-6 1/2 x 7	Gas.	6															
Centaur.....	5-2 1/2	345	2	N Way	2-2 1/2 x 5	GorK	1																
Cletrac.....F	9-16	.....	4	Own	4-3 1/2 x 4 1/2	G,K,D	2															
Cletrac.....W	12-20	.....	4	Own	4-4 x 5 1/2	G,K,D	2-3															
								MerryGar 1922	2	210	2	Evin	1-2 1/2 x 2 1/2	Gas.	.....							
								Minne.....All-P	12-25	.....	4	Own	4-4 1/2 x 7	GorK	3							
								Minne. Gen-P	17-30	.....	4	Own	4-4 1/2 x 7	GorK	3-4							
								Minne. Med.D	22-44	.....	4	Own	4-6 x 7	GorK	5-6							
								MinneHeavyD	35-70	.....	4	Own	4-7 1/2 x 9	GorK	9-9							
Do-It-All.....A	3-6	495	.....	Own	1-4 1/2 x 5	Gas.	1															
Do-It-All, Jack	6	395	.....	Own	1-3 1/2 x 3 1/2	Gas.	1															
Do-It-All.....6	12	495	2	Own	2-3 1/2 x 3 1/2	Gas.	1																
								Moline Univ D	9-18	650	2	Own	4-3 1/2 x 5	Gas.	2-3								
								Moline Orch.	9-18	.....	2	Own	4-3 1/2 x 5	Gas.	2-3							
								*Monarch....	20-30	.....	4	Beav.	4-4 1/2 x 6	G,K,D	4							

Specifications of Current Passenger Car Models

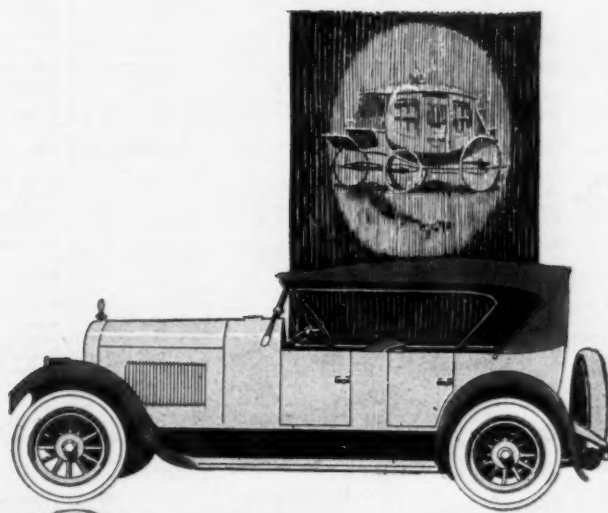
PRICES						Wheel Base	Tires	Engine Make	Cylinders: Bore and Stroke	Rated Horse Power (N.A.C.C.)	NAME AND MODEL	Carburetor	Starting and Lighting	Ignition	Clutch: Type and Make	Gearset	Universal: Type and Make	Rear Axle Type and Make	Gear Ratios
2-Pass.	5-Pass.	7-Pass.	Sport	Coupe	Sedan														
\$1995c	\$1785	\$1850	\$1885c		\$2485	127	33x4 1/2	H-S...	6-3 1/2x5	29.40	American... D-66	Strom...	G-D...	A-K...	s-p B&B...	B & B...	m Hartford.	F Salis...	4.50
	1650				(1450d)	127	33x4	Own...	6-3 1/2x5	23.44	American... Steamer	None...	L-N...	L-N...	None...	None...	None...	Own...	1.75
	1195				(1595d)	114	32x4	Cont...	6-3 1/2x4 1/2		Anderson... 41	Zenith...	West...	West...	s-p B&B...	Durston.	f Universal.	1/2 F Salis...	4.62
1495	1495	1595	(1785b)	\$1995c	1995d	120	33x4	Cont...	6-3 3/4x4 1/2	27.31	Anderson... Series 50	Rayfield.	Remy...	Remy...	s-p B&B...	Durston.	f Universal.	1/2 F Salis...	4.62
			(1915c)																
	1535				(3850f)	114	32x4 1/2	Own...	6-3 1/2x4 1/2	23.44	Apperson... 6	Strom...	Remy...	Remy...	m-d Own...	Own...	m Sterling.	1/2 F Own...	4.25
	2800	2900			(3750d)	130	34x4 1/2	Own...	8-3 1/2x5	33.80	Apperson... 8-21-S	Bijur...	Item...	Item...	m-d Own...	Own...	m Sterling.	1/2 F Own...	4.25
						121	32x4	Cont...	6-3 3/4x4 1/2	27.34	Auburn... 6-51	Strom...	Remy...	Remy...	s-p B&B...	G-L...	m Universal.	F Salis...	4.75
	1275	1345	(1895c)	1965f	2245														
			(1995n)																
	1095				1025a	1465	114	31x4	Cont...	6-3 1/2x4 1/2	23.44	Auburn... 6-43	Strom...	Remy...	Remy...	s-p B&B...	Warner.	m...	1/2 F Col...
							122	32x4 1/2	Cont...	6-3 1/2x5	25.35	Auburn... 6-63	Strom...	Remy...	Remy...	s-p B&B...	Warner.	m...	1/2 F Col...
	1395		1495d		1850d	115	32x4	Cont...	6-3 1/2x4 1/2	23.44	Barley...	Strom...	Delco	Delco	s-p B&B...	Futler.	f M&E...	1/2 F Col...	4.58
805	885	725g		1175	(1395)	109	31x4	Own...	4-3 3/4x4 1/2	18.23	Buick... 1923-34-5-6-7-38	Marvel.	Delco	Delco	m-d Own...	Own...	m Own...	1/2 F Own...	4.66
					(1325)														
1175	1195	975g		1935	1985	118	33x4 1/2	Own...	6-3 3/4x4 1/2	27.31	Buick... 1923-41-4-5-47	Marvel.	Delco	Delco	m-d Own...	Own...	m Own...	F Own...	4.40
				1435	1895	124	33x4 1/2	Own...	6-3 3/4x5	27.34	Buick... 1923 48-9-50-4-55	Marvel.	Delco	Delco	m-d Own...	Own...	m Own...	F Own...	4.40
				(1675c)															
2885	2885	2885		(3675)	(3950)	132	33x5	Own...	8-3 1/2x5 1/2	31.25	Cadillac... 61	Own...	Delco	Delco	m-d Own...	Own...	m Spicer.	F Tim...	Opt
				(3750d)	4300														
1750b	1790		2230d	2480	2975b	122	32x4 1/2	Cont...	6-3 3/4x4 1/2	27.34	Case... X	Rayfield.	Delco	Delco	m-d Own...	Own...	f Sneed...	1/2 F Col...	4.66
			1990	2480c	2975b	129	34x4 1/2	Cont...	6-3 3/4x5 1/2	31.54	Case... W	Rayfield.	Delco	Delco	m-d Own...	Own...	f Arvae...	1/2 F Col...	4.45
1185	1185			1595	(2295)	117	32x4	Own...	6-3 1/2x4 1/2	25.35	Chalmers... 1923	Strom...	A-L...	Remy...	m-d Own...	Own...	m Hardy...	1/2 F Adams...	5.13
					(1585)	122	32x4	Own...	6-3 1/2x4 1/2	25.35	Chalmers... 1923	Strom...	A-L...	Remy...	m-d Own...	Own...	m Hardy...	1/2 F Adams...	5.13
1595c	(1395c)	1545	1595a	(1955d)	1695d	123	33x4	Own...	6-3 1/2x5	29.40	Chandler...	Rayfield.	Bosch...	Bosch...	s-p B&B...	Own...	f Own...	F Own...	4.45
	(1695c)			(2195d)	(2295f)														
510	525	425g		840c	880	103	30x3 1/2	Own...	4-3 1/2x4	21.76	Chevrolet... Superior	Zenith...	Remy...	Remy...	e Own...	Own...	m Own...	1/2 F Own...	3.77
				690k															
710	725	625g		1040c	1060	103	30x3 1/2	Own...	4-3 1/2x3 1/2	19.60	Chevrolet... M	Holley...	Remy...	Remy...	m-d Own...	Own...	m Mech...	1/2 F Own...	4.44
				880k															
1085b	995		1260d	1485d	1121 1/2	31x4	Own...	6-3 3/4x4 1/2	22.50	Cleveland... 42	Strom...	Bosch...	Bosch...	s-p B&B...	Own...	m Mech...	1/2 F Own...	4.90	
1885		1885	1885c	(2585b)	2685f	127 1/2	33x5	North...	8-3 1/2x4 1/2	39.20	Cole... 890	Johnson.	Delco	Delco	m-d North...	Own...	m Spicer.	1/2 F Col...	4.70
				(2685d)															
	1475		1995c	1995d	115	32x4	Cont...	6-3 3/4x4 1/2	27.34	Columbia... Big Six	Strom...	A-L...	A-K...	s-p B&B...	Durston.	m Spicer.	1/2 F Tim...	4.75	
995	985		1395d	1235a	1395d	115	31x4	Cont...	6-3 3/4x4 1/2	23.44	Columbia... Light Six	Strom...	A-L...	A-L...	s-p B&B...	Durston.	m Spicer.	1/2 F Tim...	4.80
	1095																		
1195	1235		(1495b)	(2055d)	2055d	116	32x4	Falls...	6-3 3/4x4 1/2	23.44	Courier...	Strom...	West...	A-K...	s-p B&B...	Muncie.	f Flexite	1/2 F Col...	5.00
			(1565c)	(1875f)															
			3000		4500	138	33x4 1/2	Cont...	6-3 3/4x5 1/2	31.54	Crawford... 23-6-60	Zenith...	West...	Bosch...	m-d B-L...	B-L...	m Spicer.	1/2 F Tim...	
			3500c		4250c	138	33x5	Cont...	6-3 3/4x5 1/2	31.54	Crawford-Dagmar... 6-70	Zenith...	West...	Bosch...	m-d B-L...	B-L...	m Spicer.	1/2 F Tim...	
4350b	4350c	4350	435 c	5350c	6000	132	33x5	Own...	8-3 1/2x5	45.00	Cunningham... V	Strom...	Delco	Delco	m-d Own...	Own...	f Sneed...	F Tim...	4.23
1495b	1295		1495c	1705c	1795d	115	31x4	Cont...	6-3 1/2x4 1/2	23.44	Daniels... 23-38	Strom...	Delco	Delco	m-d Own...	Own...	m Spicer.	F Tim...	4.23
1595	1595		1995	2095		120	32x4	Cont...	6-3 3/4x4 1/2	27.34	Davis... 71	Strom...	Delco	Delco	s-p B&B...	Warner.	m Peters.	1/2 F Tim...	5.10
850	890			980b	1440d	114	32x4	Own...	4-3 3/4x4 1/2	24.03	Davis... 63-65	Strom...	Delco	Delco	s-p B&B...	Warner.	m Peters.	1/2 F Tim...	5.15
				1195b															
	3950c	3950	4150c	4985c	5750f	132	33x5	Own...	6-4 x5	38.40	Dodge Brothers...	Stewart.	N.E.	N.E.	m-d Own...	Own...	m Own...	1/2 F Own...	4.16
	865	865	(1015a)	1240	1370	108	31x4	D-Ly...	4-3 1/2x5	19.60	Dorris... 6-80	Strom...	West...	Bosch...	m-d Own...	Warner.	m Spicer.	1/2 F Tim...	4.23
			(1015d)	1020k	1070k														
990	990			1145	1195	115	31x4	Falls...	6-3 3/4x4 1/2	23.44	Dort... 25-20	Carter...	Bosch...	Bosch...	m-d Detlafl.	Own...	m Mech...	1/2 F Flint...	4.66
				1365	1495														
6500				7800c	7800b	134	33x5	Own...	8-2 1/2x5	26.45	Duesenberg... Straight 8	Strom...	Delco	Delco	s-p Own...	Own...	f Climax...	1/2 F Own...	4.45
890	890		1095c	1365	1365	109	31x4	Cont...	4-3 3/4x4 1/2	24.03	Durant... A-22	Till...	A-L...	A-L...	s-p Own...	Warner.	m Spicer.	1/2 F Adams...	4.33
				(1465f)															
1600	1650			2250	2400	123 1/2	32x4 1/2	Anst...	6-3 3/4x4 1/2	25.35	Durant... B-22	Rayfield.	A-L...	A-L...	s-p Ansted.	Warner.	m Spicer.	1/2 F Tim...	5.15
1485	1095			1795c	1795d	112	32x4	Own...	4-3 3/4x5 1/2	18.91	Earl... 40	Soce...	A-L...	Conn.	s-p B&B...	Own...	f Own...	1/2 F Own...	4.87
	965		1165d	1425d	112	31x4	Lyc...	4-1 1/2x5	19.60	Earl... 4-40	Strom...	Delco	Delco	s-p B&B...	Muncie.	m Peters.	1/2 F Salis...	4.50	
1395	1395			1875	2065	118	33x4	Cont...	6-3 1/2x4 1/2	25.35	Earl... 6-60	Strom...	Delco	Delco	m-d Warner.	Warner.	m Spicer.	1/2 F Salis...	4.50
	1045			1145	1245k	108 1/2	32x4	Own...	4-3 3/4x5	18.23	Eaton...	Own...	Bosch...	Bosch...	m-d Own...	Warner.	m Spicer.	1/2 F Own...	4.66
	1195c			1895c	1985d	120	32x4 1/2	Cont...	6-3 3/4x5	27.34	Flint...	Strom...	A-L...	A-L...	s-p B&B...	Warner.	m Spicer.	1/2 F Adams...	
269r	298s	235g		530	(595)	100	30x3 1/2	Own...	4-3 3/4x4	22.50	Ford... T	Own...	Own...	Own...	m-d Own...	Own...	m Own...	1/2 F Own...	3.63
				725															
3900	2975			4900	4900d	132	32x4 1/2	Own...	6-3 3/4x5	27.34	Fox... 7F	Zenith...	West...	Scintilla...	m-d B-L...	B-L...	m Spicer.	1/2 F Tim...	4.90
1900	1950			2750c	2850d	115	32x4	Own...	6-3 1/2x4	25.35	Franklin... 10	Own...	N.E.	A-K...	s-p B&B...	Own...	m Spicer.	1/2 F Own...	4.73
965	965		1065c	1115k	1365d	112	32x4	Lye...	4-3 1/2x5	21.76	Gardner... T-R & G	Carter...	West...	West...	s-p B&B...	Mech...	m Mech...	1/2 F Flint...	4.80
490	490			895b	785d	100	30x3 1/2	Own...	4-3 3/4x4	21.03	Gray...	West...	West...	West...	m-d Own...	Own...	m Mech...	1/2 F Tim...	3.90
				835d															
2250	2250c			2600	2850d	120	32x4 1/2	Weid...	4-3 3/4x5 1/2	22.50	H.C.S... Series 4								

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ANDERSON
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*T*ouring Car
only
\$1195
f. o. b. factory

Specifications of Current Passenger Car Models

PRICES										NAME AND MODEL	Carburetor	Starting and Lighting	Ignition	Clutch, Type and Make	Gearset	Universal: Type and Make	Rear Axle: Type and Make	Gear Ratios			
2-Pass.	5-Pass.	7-Pass.	Sport	Coupe	Sedan	Wheel Base	Tires	Engine Make	Cylinders: Bore and Stroke										Rated Horse Power (N.A.A.C.)		
3185a 3435c 900	3435e 925	3185e			136 109	32x4 1/2 31x4	Own.	6-3 1/2x5 1/2 4-3 1/2x4 1/2	33.75 21.03	Marmion. Maxwell.	34 Stewart.	Delco. Remy.	Delco. Remy.	m-d Own. e Own.	Own.	m Spicer. f Own.	3/4 F Own. 1/2 F Own.	3.75 4.60			
5400	4550g	5700	5000e		140	33x5	Own.	6-4 1/2x6	48.60	McFarlan.	1923	Rayfield.	West.	West.	m-d M&E.	B-L.	m Peters.	F Tim.	3.75		
3950b 3750c	3950e 3750e	3950e			132 132	32x4 1/2 32x4 1/2	Own.	4-3 1/2x6 1/2 6-3 1/2x5	22.50 33.75	Mercer. Mercer.	Series 5 6	Ball&B. Strom.	West. Strom.	Eisemann. Eisemann.	m-d Own. m-d Own.	Own.	m Spicer. m Spicer.	F Own. 3/4 F Own.	3.87 3.75		
1935 1490b	1995 1590		1850e	2050e	120 119	32x4 32x4	Cont.	6-3 1/2x4 1/2 6-3 1/2x5	25.35 29.40	Merit. Mitchell.		Strom. Strom.	Delco. Remy.	s-p B&B. Remy.	Muncie. Own.	f Sneed. m Own.	F Col. F Own.	4.6 4.4			
		1690			127 117	32x4 1/2 30x3 1/2	Own.	6-3 1/2x5 6-3 1/2x4 1/2	29.40 23.41	Mitchell. Moon.	F-50 F-50 6-40	Strom. Strom.	Remy. Delco.	Remy. Delco.	s-p B&B. s-p B&B.	Own. Warner.	m Own. m Spicer.	F Tim. 3/4 F Tim.	4.42 4.80		
	1295		1445d	1085e	1605 1895p	31x4	Cont.	6-3 1/2x4 1/2	27.34	Meen.	6-58	Strom.	Delco.	Delco.	s-p B&B.	B-L.	m Spicer.	3/4 F Tim.	5.09		
1785		1995	2585e	2485f	2040b 2190f	121 121	33x4 33x4	Own.	6-3 1/2x5 6-3 1/2x5	25.35 25.35	Nash. Nash.	691-3-6-7 692-4-5	Marvel. Marvel.	Delco. Delco.	Delco.	s-p B&B. s-p B&B.	Own. Own.	m Own. m Own.	3/4 F Own. 3/4 F Own.	1.50 1.50	
1210	1240		1615e		112 112	33x4 33x4	Own.	4-3 1/2x5	18.23	Nash.	41-4	Schebler.	Delco.	Delco.	s-p B&B.	Own.	m Own.	3/4 F Own.	1.88		
915	935				1195k 1275k																
2175b	2475e	2375f	2485d	3250e	3285f	130	32x4 1/2	Own.	6-3 1/2x5 1/2	29.40	National.	6-71	Rayfield.	West.	Delco.	s-p B&B.	B-L.	m Universal.	F Col.	1.08	
		3150		3725e	3825f	121	32x4	Cont.	6-3 1/2x4 1/2	27.34	National.	6-51	Stromb.	A-L.	Own.	s-p B&B.	Covert.	m Universal.	3/4 F Salis.	4.50	
	1485			1785d	1885d	112	32x4	Own.	6	National.	6-31										
2500	2500e	2600e			3500a	128	32x4 1/2	Cont.	6-3 1/2x4 1/2	27.33	Noma.	4C	Zenith.	Delco.	Delco.	s-p B&B.	Detroit.	m Spicer.	3/4 F Tim.	1.45	
975 995	795 795g	1165e	1445d	1445d	1515	115	32x4	Own.	6-2 1/2x4 1/2	18.99	Oakland.	6-44	Marvel.	Remy.	a Own.	Muncie.	m Mech.	F Own.	1.33		
1145b	955	975	1350d	1075	1475	115	32x4	Own.	4-3 1/2x5 1/2	21.86	Oldsmobile.	43 A	Zenith.	Delco.	Remy.	s-p B&B.	Muncie.	m Own.	3/4 F Own.	1.70	
		1850e	1735		2635f	122	33x4 1/2	Own.	8-2 1/2x4 1/2	26.45	Oldsmobile.	46	Ball&B.	Delco.	Delco.	e Own.	Muncie.	m Spicer.	F Own.	1.53	
1625	1375		1675e	1875b	2025d	115	32x4	Own.	8-2 1/2x4 1/2	26.45	Oldsmobile.	47	Johnson.	Delco.	Delco.	s-p B&B.	Muncie.	m Own.	3/4 F Own.	1.50	
525	525		425e	795	860f	100	30x3 1/2	Own.	4-3 1/2x4	18.23	Overland.	91	Till.	A-L.	Conn.	s-p B&B.	Own.	m Own.	3/4 F Own.	1.50	
2485	2485	2250e	2650e	3175e	3275d	126	33x4 1/2	Own.	6-3 1/2x5	27.34	Packard.	126	Own.	A-K.	Delco.	m-d Own.	Own.	m Spicer.	3/4 F Own.	1.30	
		2350g	2685		3525f 3575f	133	33x4 1/2	Own.	6-3 1/2x5	27.31	Packard.	133	Own.	A-K.	Delco.	m-d Own.	Own.	m Spicer.	3/4 F Own.	1.66	
3850	3850e	3850		5240e	5100f	136	35x5	Own.	12-3x 5	43.20	Packard.	335	Own.	Bijur.	Delco.	m-d Own.	Own.	m Spicer.	1/2 F Own.	1.36	
2695b	2450e	2450		33135	3235d	131	33x4 1/2	Cont.	6-3 1/2x5	33.75	Paige.	6-70	Rayfield.	Remy.	A-K.	m-d Long.	Warner.	m Mech.	3/4 F Tim.	1.45	
		1390	1425		3235f																
3300	2990e	2990		2395	2395	120	32x4 1/2	Cont.	6-3 1/2x4 1/2	27.31	Peterson.	22-6-52	Strom.	Delco.	Delco.	s-p B&B.	Durston.	m Hartford.	3/4 F Std.	1.90	
		2990e		3400a	3990a	128	33x5	Own.	8-3 1/2x4	33.80	Peerless.	23	Ball&B.	Delco.	Delco.	m-d Own.	Own.	m Spicer.	3/4 F Tim.	1.50	
5250	5250e	5250		6800	6900e	138	33x5	Own.	6-4 x5 1/2	38.40	Pierce-Arrow.		Own.	Delco.	Delco.	m-d Own.	Own.	m Spicer.	1/2 F Own.	1.29	
		1695	1745	1745	2445	2495	126	33x4 1/2	H-S	6-3 1/2x5	25.35	Pilot.	6-50	Till.	Bijur.	Conn.	s-p B&B.	Muncie.	m Hartford.	3/4 F Col.	1.33
575	595			835	995	102	32x3 1/2	Own.	4-3x4 1/2	14.40	Premier.	Stratton	Zenith.	A-L.	A-L.	Covert.	Covert.	m Spicer.	3/4 F Col.	1.58	
3150	3100e	3250		4300	5100	126 1/2	32x4 1/2	Own.	6-3 1/2x5 1/2	27.34	Premier.	6-D	Johnson.	Delco.	Delco.	s-p B-B.	Own.	m Spicer.	3/4 F Tim.	1.66	
1045	1065			1750	3550f	128	32x4 1/2	Falls.	6-3 1/2x4 1/2	23.44	Premcar.	6-40-A	Strom.	Wagner.	Wagner.	s-p B&B.	Mech.	m Spicer.	3/4 F Tim.	1.50	
2485b	2585p	2485		3350	3675f	137	32x4 1/2	Anst.	6-3 1/2x5 1/2	27.34	Princeton.		Rayfield.	A-L.	A-L.	m-d Durant.	Own.	m Spicer.	3/4 F Dur.	1.12	
	1605			2385e	2175f	116	32x4	Own.	4-3 1/2x5	22.50	R & V Knight.	R	Strom.	Wagner.	Wagner.	s-p B&B.	B-L.	m Spicer.	3/4 F Salis.	1.75	
	2850	2900			3500d	124	32x4 1/2	Own.	6-3 1/2x4 1/2	29.40	R & V Knight.	H	Strom.	Wagner.	Wagner.	s-p B&B.	B-L.	m Spicer.	3/4 F Tim.	5.40	
	1615	1435	1745	1835e	1885d	120	32x4	Own.	6-3 1/2x5	24.34	Reo.	T5	Rayfield.	N.E.	N.E.	m-d Own.	Own.	m f Own.	3/4 F Own.	1.70	
		1485		1885e	1985d	117	32x4	Own.	6-3 1/2x4 1/2	23.44	Rickenbacker.	A	Strom.	Simms.	A-K.	s-p Own.	Warner.	m Universal.	3/4 F Col.	4.63	
2685	2485e	2635	2750e	3685	3585d	123	32x4 1/2	Cont.	6-3 1/2x5 1/2	29.40	Roamer.	6-54-E	Strom.	West.	Splitdorf.	s-p B&B.	G-L.	f Sneed.	3/4 F Tim.	4.60	
3685	3485e	3800	3650e		4650e	128	33x4 1/2	Roch.	4-4 1/2x6	28.90	Roamer.	4-75-E	Strom.	West.	Splitdorf.	m-d B-L.	B-L.	f Sneed.	3/4 F Tim.	4.08	
3785					13150	1431 1/2	35x5	Own.	6-4 1/2x4 1/2	48.60	Rolls-Royce.	40-50	Own.	Bijur.	Bosch.	e Own.	Own.	m Own.	F Own.	3.25	
10900	10900	10950			5200e	118	32x4	Own.	4-29 1/2x5 1/2	12.10	Rubay.		Stromb.	Bosch.	Bosch.	s-p Own.	Own.	m Universal.	F Own.	5.10	
				5100e	5250e																
1645	1645			2645	2645	118	33x4	Cont.	6-3 1/2x4 1/2	27.34	Sayers Six.	DP	Strom.	Delco.	Delco.	s-p B&B.	G-L.	m Arvae.	3/4 F Std.	4.75	
875	875			108	30x3 1/2	Lye.	4-3 1/2x5	19.60	Seneca.	L-2 & O-2		Zenith.	A-L.	A-L.	s-p B&B.	G-L.	m Universal.	F Peru.	1.75		
985	985			112	31x4	Lye.	4-3 1/2x5	19.60	Seneca.	50 & 51		Zenith.	A-L.	A-L.	s-p B&B.	G-L.	m Universal.	F Peru.	4.50		
2150		2395	2395	2750	3200	127	34x4 1/2	Own.	8-3 1/2x5	33.80	Standard.	795	Zenith.	West.	Splitdorf.	s-p B&B.	G-L.	m Arvae.	3/4 F Tim.	4.45	
2750	2750	2750	2425g	3585d	3950e	130	32x4 1/2	Own.	2-4 x5		Stanley.	740	None.	Bijur.	None.	None.	None.	None.	3/4 F Own.	1.50	
				2985f																	
319r	348s	285e		580	615	102	30x3 1/2	Cont.	4-3 1/2x4 1/2	15.63	Star.		Till.	A-L.	A-L.	s-p Own.	Warner.	Spicer.	3/4 F Tim.	4.87	
2250	2250	2450	2275e	3150e	3150f	125	34x4 1/2	Own.	4-3 1/2x5 1/2	22.50	Stearns-Knight.	SKL4	Rayfield.	West.	A-K.	m-d Own.	Own.	f Climax.	3/4 F Own.	1.70	
2700	2700	2850	2700e	3500e	3700f	130	31x4 1/2	Own.	6-3 1/2x5	27.31	Stearns-Knight.	6	Rayfield.	West.	A-K.	m-d Own.	Own.	f Climax.	3/4 F Own.	1.50	
				1500f																	
1315	1295		1085e		1895e	117	32 1/4	Own.	6-3 1/2x4 1/2	25.35	Stephens.	10	Stromb.	Delco.	Delco.	s-p B&B.	Mech.	m Mech.	3/4 F Tim.	4.66	
					1595d																
975b	975	785g		2385f	1225b	124	33x4 1/2	Own.	6-3 1/2x4 1/2	25.35	Stephens.	20	Stromb.	Delco.	Delco.	s-p B&B.	Mech.	m Mech.	3/4 F Tim.	5.50	
1250	1275		1090g	1875	2050	112	31x4	Own.	6-3 1/2x4 1/2	23.44	Studebaker.	Light Six	Strom.	Wag.Remy	Wag.Remy	s-p Own.	Own.	f Thermoid.	3/4 F Own.	1.55	
						119	32x4	Own.	6-3 1/2x5	29.40	Studebaker.	Special Six	Strom.	Wag.Remy	Wag.Remy	s-p Own.	Own.	m Spicer.	3/4 F Own.	4.33	
1450g	1835	1750	2400e	2750	2750f	126	33x4 1/2	Own.	6-3 1/2x5	36.01	Studebaker.	Big Six	Ball&B.	Wag.Remy	Wag.Remy	s-p Own.	Own.	m Spicer.	1/2 F Own.	3.70	
		2550d																			
1995	1995				2550	120	32x4	Own.	6-3 1/2x5	27.34	Stutz.	6	Stromb.	Remy.	Remy.	s-p	Own.		3/4 F Own.		
2450	2790e	3165e	2670a	3490	4450d	130	32x4 1/2	Own.	4-4 1/2x6	30.63	Stutz.	KLDH	Strom.	Remy.	Delco.	m-d Warner.	Own.	m Hartford.	3/4 F Own.	3.75	
1175	1175					117	33x4	H-S.	4-3 1/2x5	19.60	Tulsa.	E-1-2-3	Zenith.	Dyneto.	Conn.	s-p B&B.	Muncie.	m	F Salis.	4.60	
1275	1275	p1565e	1305	1793f	1795d	115	32x4	Own.	6-3 1/2x4 1/2	23.44	Tulsa.	58	Zenith.	West.	A-K.	s-p Dooley.	Muncie.	m Thiemer.	3/4 F Own.	4.50	
	1990				2096d	125	32x4 1/2	Cont.	6-3 1/2x5 1/2	29.40	Westcott.	D-48	Rayfield.	Delco.	Delco.	s-p B&B.	B-L.	m Peters.	3/4 F Tim.	4.40	
	1690		1890d	2490f	2690d	120	32x4 1/2	Cont.	6-3 1/2x4 1/2	27.34	Westcott.	C-44	Rayfield.	Delco.	Delco.	s-p B&B.	Warner.	m Peters.	3/4 F Col.	4.95	
				1793f	2149d																
2575	2475			3375e	3475f	121	32x4 1/2	Own.	8-3 1/2x4	33.80	Wills Sainte Claire.	A-68	Holley.	Delco.	Delco.	m-d Own.	Own.	m Mech.	3/4 F Own.	4.45	
					3890f																
	2875e	2790				127	32x4	Own.	8-3 1/2x4	32.80	Wills Sainte Claire.	A-68	Holley.	Delco.	Delco.	m-d Own.	Own.	m Own.	3/4 F Own.	4.45	
1235	1235			1605e	1795d	118	32x4	Own.	4-3 1/2x4 1/2	21.03	Willys-Knight.	20	Till.	A-L.	A-L.	m-d Own.	Own.	f Own.	3/4 F Own.	5.41	
		1435		1995f	224 1/2	124	32x4 1/2	Own.	4-3 1/2x4 1/2	21.03	Willys-Knight.	27	Till.	A-L.	A-L.	m-d Own.	Own.	f Own.	3/4 F Own.	5.41	
3400	3600	3400		4000	1550f	132	33x5	Own.	6-3 1/2x5 1/2	33.75	Winton.	40	Rayfield.	Delco.	Delco.	m-d Warner.	Warner.	f Climax.	3/4 F Tim.	4.68	

MISCELLANEOUS

- a-2 Passenger, d-5 Passenger
- b-3 Passenger, e-6 Passenger,
- c-4 Passenger, f-7 Passenger
- g-Chassis Price,
- h-All Metal Type,
- k-Soft Top Type,
- n-Tire Size 32x4½,
- p-Sport.
- t-Price without starter and demountable rims. Price, complete, \$414
- s-Price without starter and demountable rims. Price, complete, \$443
- †Standard Phaetons.
- ‡Brougham

ENGINE

Anst—Ansted
Bea—Beaver
Cont—Continental
Dues—Duesenberg
H-S—Herschell-Spillman
Lyc—Lycoming

CARBURETOR

Ball & B—Ball & Ball
Till—Tillotson
Strom—Stromberg

STARTING, LIGHTING IGNITION

A-L—Auto Lite
G-D—Gray & Davis
L-N—Leece Neville
N. E.—North East
West—Westinghouse
Wag. Remy—Wagner Remy

CLUTCH

c—Cone
m-d—Multiple disc
s-p—Single plate
B & B—Borg & Beck
B-L—Brown-Lipe

GEARSET

B-L—Brown-Lipe
G-L—Grant-Lees
Mech—Mechanics

UNIVERSAL.

f—fabric
m—metal
M&E—Merchant & Evans
Mech—Mechanics

REAR AXLE

F—Floating
 ½ Floating—Semi-Floating
 ¾ F—Three-Quarter Floating
 Col—Columbia
 Salls—Sallsbury
 Std—Standard
 Tim—Timken



No Wonder This Dealer's Making Money

FEDDERS
AUTOMOTIVE RADIATORS

*For 25 years the name
FEDDERS has been
known in the Automotive
Industry as an unfailing
guarantee of Quality
Production, and Efficient,
Satisfactory Service.*

Every time he, or one of his men, fills a customer's radiator he asks about the radiator's condition.

If it's leaky or worn out—he offers this suggestion: "Why not replace it with a genuine Fedders Core?"

There's good money in the radiator replacement business. It's a satisfactory business, too. You can carry a stock of these new FEDDERS Cores for a small investment. Then you're ready to take advantage of the opportunities for extra money that are coming to your place every day.

Every single one of these FEDDERS Cores is of the genuine FEDDERS Quality. And the new FEDDERS shallow design—lighter, easier to install, more efficient, more economical—gives you a strong "REASON-WHY" selling argument.

*If you are in position to handle sales
and service for a considerable territory,
write us for distributorship proposition.*

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Factory and General Offices, BUFFALO, N. Y.

Branches and Distributing Agencies:

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Fedders Mfg. Co., Inc.
3610 Superior Ave., N. E.

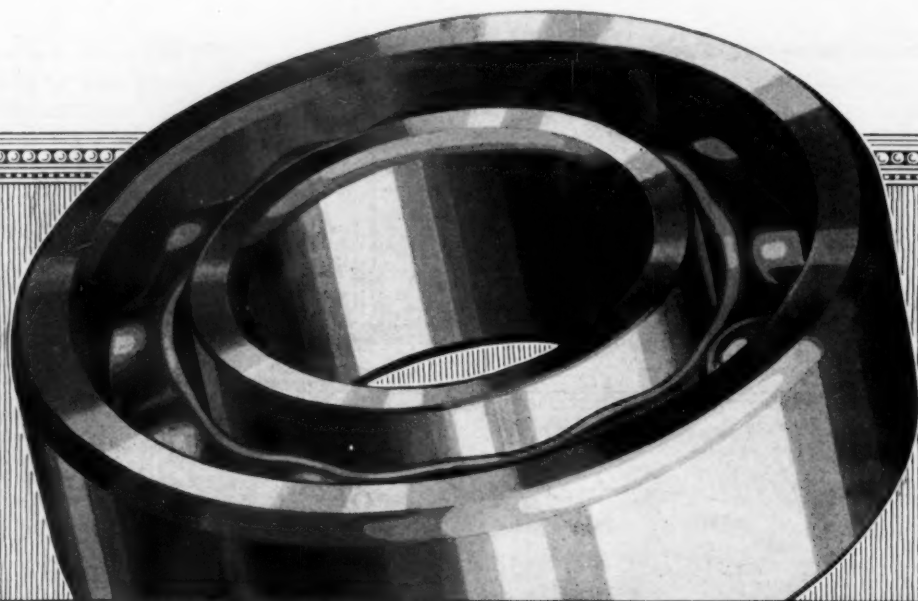
INDIANAPOLIS
Seth Klein Radiator Service Co.
820 North Meridian St.

NEW YORK
Henry Jellinek Co., Inc.
364-366 W. 50th St.

DETROIT
Olympian Radiator Repair Co.
218 W. Adams Ave.

BALTIMORE
Enterprise Auto Radiator Wks.
1908-1912 Frederick Avenue

SAN FRANCISCO, CALIF.
Feldmans Auto Metal Works
76 Eighth St.



New Departure Ball Bearings

70,000 Ball Bearings are produced in our plants day after day, each a jewel of precision and quality.

This volume comes as a result of the effort we are making to produce a ball bearing that in its design, material, and construction shall be as near perfect as possible.

There is a New Departure for practically every condition of service.

Single Row, a radial Ball Bearing;

Double Row, a radial and two-direction thrust Ball Bearing;

Radax, a radial and single-direction thrust Ball Bearing;

Front Wheel, a Ball Bearing of the "Radax" type, of separable, interchangeable construction, designed especially for front wheels of automobiles;

Magneto, a separable, interchangeable form of the single row type, made in a series of small sizes for use in magnetos and similar devices.

THE NEW DEPARTURE MANUFACTURING COMPANY

Bristol, Connecticut

Detroit

Chicago

Go-Getter Is Right!

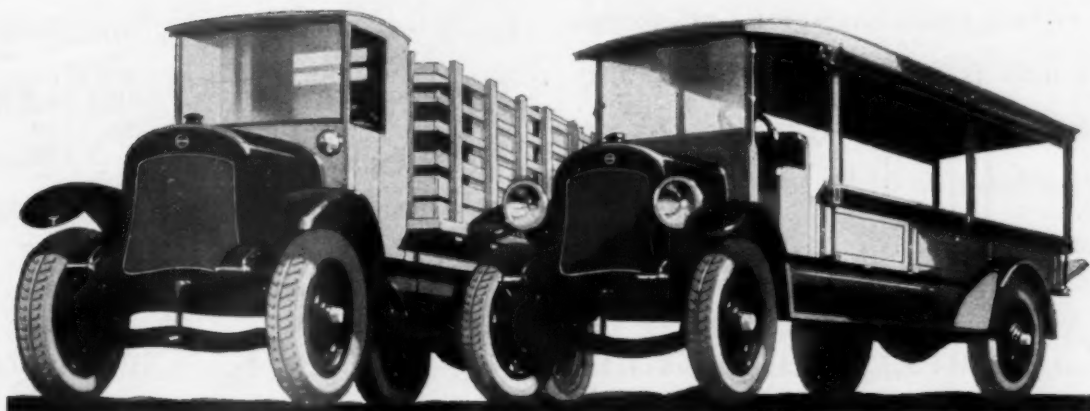
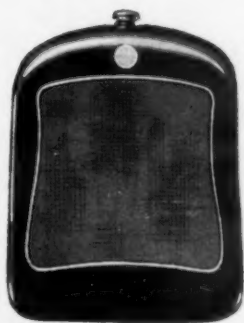
Chicago proved it.

Dealers and business men crowded the Hotel Sherman, Chicago, during the second annual Ruggles Truck Show.

New franchises were granted, new territory opened for 1923. Business men were sold on the strength, appearance and solid worth of Ruggles Go-Getter Trucks.

You will find a prosperous future in a Ruggles dealership. The price, the quality, the sound and vigorous factory organization give you the selling support that means success. Write or wire us for the Go-Getter franchise offer.

RUGGLES MOTOR TRUCK COMPANY, Saginaw, Michigan
Canadian Factory: Ruggles Motor Truck Company, Ltd., London, Ont.



RUGGLES

The World's Greatest Truck Value

What Concentration Means in Merchandising!

The accessory business is now so established that the dealer is in a position to know positively which are the safe and permanent lines to handle.

A merchant should not gamble with his biggest asset—satisfied customers—by selling untried or doubtful quality in anything. Neither can he consistently recommend one brand one day and another the next.

The successful merchant in all fields concentrates his business on the nationally known, well advertised lines, selecting the leader in each field. He then knows that he is selling the best and is building a sound and profitable business by rightly earning the confidence of his customers.

Success begets success and only by

handling the lines that are in the lead, year after year, will the dealer put his business in a class reflecting that same leadership.

For fifteen years AC's have been making friends, until today there are millions of motorists who will have no other plugs, and other owners are fast realizing that AC is the safe plug to use.

Read the opposite page which shows why AC is the plug with the greatest sales possibilities, both present and future. It is the best advertised, most profitable and easiest selling plug.

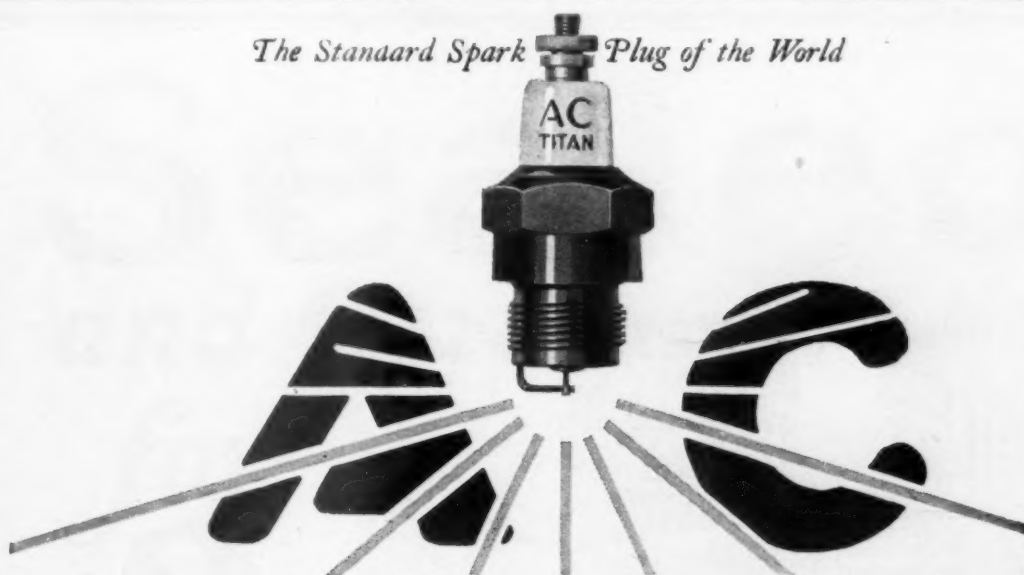
These facts prove that so far as spark plugs are concerned, AC is the logical line upon which you should concentrate.

AC Spark Plug Company, FLINT, *Michigan*

U. S. Pat. No. 1,135,727, April 13, 1915, U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

S e l l A C S p a r k

The Standard Spark Plug of the World



Just Consider How Many AC-Equipped Cars There Are in Your Locality!

Think of all the Chevrolets:

—of all the Buicks:

—of all the Dodge Brothers:

*—of all the Willys - Knights
and Overlands:*

—and of all the other cars: Apperson,
Cadillac, Chalmers, Chandler,
Cleveland, Cole, Dort, Durant,
Essex, Haynes, Hudson, Hupmo-
bile, Jewett, Marmon, Maxwell,
Mitchell, Nash, Oakland, Olds-
mobile, Paige, R & V Knight, Star
*—and more than three hundred ad-
ditional makes:*

—All AC-equipped

*—and already in use in your locality,
with the number growing every
day.*

This tremendous ready-made mar-
ket for AC's is right at your door,
*and will always be there in ever-
increasing size.*

In addition, think of all the Fords
that you can easily equip with AC

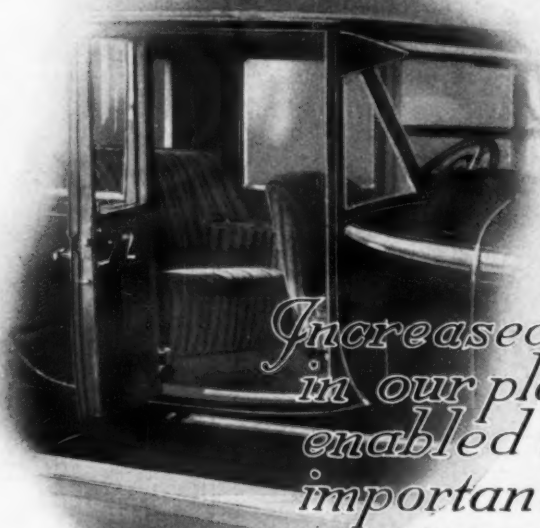
1075's—the plug especially designed
for the Ford engine by AC—the plug
that will make satisfied customers
for you and which carries a good
margin of profit.

Also in AC Carbon Proofs you have
the most successful plug ever de-
vised for motors that have a tendency
to foul the spark plugs.

Remember, too, that besides being
regular equipment on all of these
cars, AC's are heavily advertised—
that all the motorists in your locality
either use or know AC's by reputa-
tion and are glad to be able to get
them from you.

No other spark plug, it is evident,
can begin to offer you the selling
possibilities that AC's do. For vol-
ume, quick sale, rapid turnover,
liberal profit and satisfied customers
AC's lead the field.

Plugs by the Set



*Increased facilities
in our plant have
enabled us to make
important improve-
ments and to effect
new economies in the
designing and pre-
cision of manufacture
of Mohair Velvets
for Motor Cars; and
these facilities are
placed directly at
the disposal of Car
and Body Builders.*

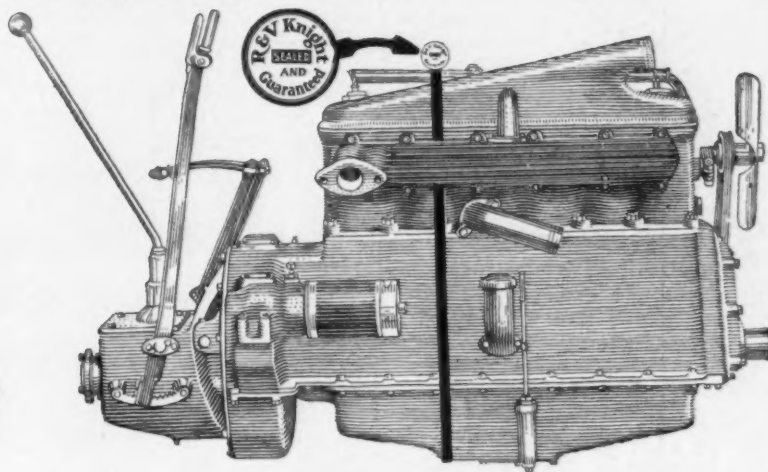
The Shelton Looms

OWNED AND OPERATED BY

SIDNEY BLUMENTHAL & CO. INC. NEW YORK

Sealed and Guaranteed

for
2
years



Insuring the Dealer His Profit

Banding, sealing and guaranteeing the new six cylinder R&V Knight insures every dealer a clean net profit on every sale he makes. None of his profit is used up in service to his customers.

The guarantee absolutely protects him as fully as it does the customer. Should the R&V Knight Six Engine require any attention within two years of purchase date, except such as arises from neglect or collision, those adjustments do not cost the owner a cent—nor do they cost the dealer a cent. *We pay all labor and material bills.*

Every Automobile Dealer Now Authorized to Sell the New R&V Knight Six

We believe the new R&V Knight Six—the car of super-dependability—demands a new method of marketing. The 2-year Guarantee made known to the public through extensive advertising will create a big demand for the “best all around automobile value in America.”

We want to make it possible for the motorist to buy the R&V Knight Six from the dealer with whom he likes to do business. Therefore, we

authorize every legitimate automobile dealer to sell this car, no matter what other cars he handles.

Selling an Asset—not a Liability

Service has been the “bug bear” of the automobile dealer. It has been the profit eater of the business. When you sell an R&V Knight Six you are not liable for a cent of expense on engine service for two years. We pay all expense. Such absolute insurance of satisfaction to the owner cannot fail to build up an asset of good-will for you, the seller. You can increase this good-will by an intelligent attention which will insure the owner the uninterrupted service this car is built to give.

You Don't Have to Stock the R&V Knight Six to Sell It

With your overhead expense taken care of by cars of a non-competitive class, you can, with a little effort, sell R&V Knight cars at a clean net profit. You don't even need to buy a demonstrator.

Write for our Unique Dealer Plan

The Sealed Engine gives you the greatest selling appeal ever created. It has taken the public by storm wherever explained. Advertising will put it over big. You assume no liability. Your profit is net. Write for details of the plan.

R & V MOTOR COMPANY, *East Moline, Ill.*

R&V Knight Six

“EVERLASTING PERFORMANCE”

QUALITY SNAP RINGS

*Easy to Install
Quick Seating
Long Lived
Accurate*



*"Cast
to Last"*

TO fill the steadily increasing demand for QUALITY piston rings—all Jobbers should keep their Dealers well supplied with an assortment of sizes.

QUALITY piston rings are specified as standard equipment by more than 100 leading manufacturers.

*More Than a
Million a
Month*

THE *Piston* RING COMPANY
MUSKOGON, MICH.

why many owners call brake lining "Silver Edge Raybestos"



"Line 'em with Raybestos"

When automobiles were still in their infancy, Raybestos was the brake lining most frequently used. If an owner wanted brakes relined, he asked for Raybestos. When a service man had a renewal job, he used Raybestos. As the motor car developed, this condition expanded. People began to speak of brake lining as "Raybestos."

And service men will agree that owners say, "I want some Raybestos for my brakes," meaning brake lining.

So the name, "Raybestos" has to a large extent become a *generic term* for brake lining. It is half sold before you put it in stock.

This National popularity crystallized—

Silver Edge **Raybestos leadership**

THE RAYBESTOS COMPANY

Factories: BRIDGEPORT, CONN. PETERBOROUGH, ONT., CANADA

Branches: (Detroit, 2631 Woodward Ave.
Chicago, 1603 South Michigan Ave.)

San Francisco, 835 Post St.
Washington, D. C., 107 Columbia Bldg.





**Does it pay
to buy "price" instead
of Quality?**

Low prices are often the highest. One can buy a shoddy suit at a low price, but how will it look and wear? It is just the same with brake lining. You can buy brake lining at a "price," or you can buy Raybestos.

In one case, you sell your trade merely "brake lining." Perhaps it will wear well. The chances are, it won't. When you stock Raybestos you sell something beyond price. The value is there. Service is a known quantity. Demand turns Raybestos stock into sales.

To take anything out of the cost of Raybestos would mean to take something out of the quality of Raybestos. The far-sighted merchant does not ask us to do either.

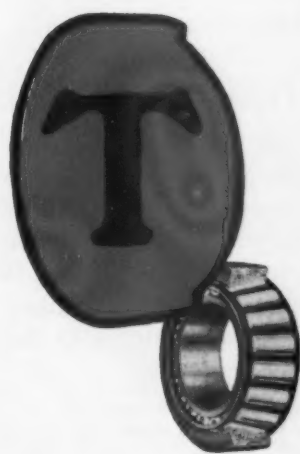
Silver Edge
Raybestos is never
sold on a "price basis.
It is not that kind
of a brake lining



(Are you watching our National advertising?)

Rear Axles

and **TIMKEN** *Tapered* **ROLLER BEARINGS**



Heavy thrust loads, in the differential, pinion, and worm assemblies, emphasize the importance of a bearing which carries radial loads and thrust loads and resultant loads, continuously and simultaneously—as do Timken Tapered Roller Bearings.

High speeds in the pinion gear, equal to those of the main shaft transmission gears, but with augmented thrust conditions, require a bearing which carries all loads *at all speeds*. Timken Bearings do just that—and they do so in the smallest possible space.

Heavy normal loads and extreme shock loads in the rear wheels demand a bearing of maximum load-carrying capacity. Timken Bearings carry more load, size for size, than any other type of bearing.

And throughout the whole rear axle assembly, as in all other mountings, the adjustability of Timken Bearings to compensate for the wear which *must* eventually follow any motion, plays an important part in influencing more and more manufacturers to standardize on rear axles equipped with Timken Tapered Roller Bearings.

The Timken Roller Bearing Co
CANTON, OHIO

INTERNATIONAL DEALER SUCCESS *Based on 5 Big Points*

1

—*A Complete Line of Quality Trucks*—International Motor Trucks are built in fourteen sizes, ranging from the 2,000-lb. Speed Truck to the 10,000-lb. heavy-duty model. There are Speed Sedans, Ambulances, Busses, Funeral Cars, Fire Trucks, Street Flushers, Power Sweepers, Oil Trucks, Dump Trucks, Lumber Units, Log Rollers, Tractor Trucks, and Hauling Units for every commercial purpose—a line offering the International dealer an unequalled sales opportunity.

2

—*A Liberal Financing Plan*—Our financing plan enables International Motor Truck dealers to do a large volume business on a comparatively small investment. It appeals at once to both the dealer, and the prospective buyer.

3

—*Forceful Sales Promotion Campaign*—Our nation-wide advertising in leading general publications and farm papers is creating new business for the International Motor Truck dealer. A direct mail campaign is sent to a selected list of prospects in each territory. Bill posting [including the dealer's name] completes an advertising campaign that gets results for the dealer.

4

—*Personal Sales Help*—At each of the 93 branch houses of the Harvester Company there is a complete organization consisting of trained motor truck men. These men are always available to help the International dealer close sales. Our organization not only helps locate and develop new business but it directs that business to the dealer.

5

Life Insurance for Transportation

Each International Motor Truck carries an Inspection Service Policy which provides free inspection at regular intervals for the life of the truck. This Inspection Service is absolutely free to both dealer and user. Factory-trained road engineers make written reports to the owner and the dealer showing the exact condition of the truck. It is after-sale service like this which saves International owners many thousands of dollars every year and brings repeat business to the established International Motor Truck dealer.

WRITE
or WIRE
International
Motor Truck
contract
may be
available in
your territory

International built-in stamina, power, and dependability plus the five business-builders in our contract mean success for the International dealer.

INTERNATIONAL HARVESTER COMPANY

Chicago

of America
[Incorporated]

U S A

Motor Truck Department

MONOGRAM JUNIOR

Self Locking Radiator Cap

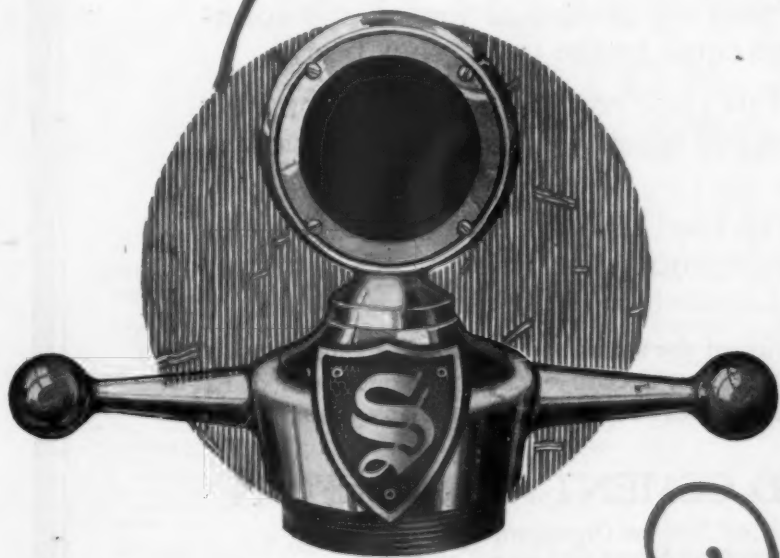
for Ford
Chevrolet 490
Overland 1923
Star
Gray

"GIVE us a cap for Fords as good as the standard Monogram, and watch us sell it!" That's what dealers said.

We did—and man, how they're selling! Start quickly, for there's a waiting list already.

Ask any Monogram distributor. We'll send you their names.

GENERAL AUTOMOTIVE CORPORATION
625 West Jackson Boulevard
Chicago, Illinois



[*Now* the
Ford-owner
Market Is
Yours too

Concrete Road Building Again Breaks All Records



79,000,000 square yards of Concrete pavement were placed under contract last year—a gain of more than 40 per cent over 1921, the largest previous year.

The construction thus provided for, and to a large extent completed, is equivalent to more than 7,480 miles of 18-foot pavement.

That is a larger amount of Concrete highway than there was in the country altogether up to 1917.

These facts witness the determination of this country to have roads equal to the traffic they bear.

Yet even with this great record, the output of motor vehicles continues to outstrip by far the construction of motor roads.

The revolution in road traffic due to the automobile has called for hole-proof, skid-proof, really enduring pavement; and Concrete fills the need.

That is the explanation of the steady, rapid gain in Concrete road construction during the last decade—the largest development in basic transportation facilities in this country in many years.

PORTLAND CEMENT ASSOCIATION

*A National Organization
to Improve and Extend the Uses of Concrete*

Atlanta	Des Moines	Los Angeles	Parkersburg	San Francisco
Boston	Detroit	Milwaukee	Philadelphia	Seattle
Chicago	Helena	Minneapolis	Pittsburgh	St. Louis
Dallas	Indianapolis	New York	Portland, Oreg.	Vancouver, B. C.
Denver	Kansas City		Salt Lake City	Washington, D. C.

"One Salesman —One Dealer —One Million"



Are you team-working with some A. E. A. Jobber's Salesman to increase your total sales? Are you taking advantage of the Automotive Equipment Association's plan to build up our whole industry?

The plan aims at One Million Dollars' worth of new business in the first six months of 1923. In dealers' stores and garages the country over, Jobbers' salesmen affiliated with the Automotive Equipment Association are now busy. Are you putting the selling schemes of its Merchandising Department into actual practice?

If you were "sold" on the "ask-'em-to-buy" and "Shop-Profits" campaigns—if you realize the money-making possibilities of nationally known and advertised products, such as the McQuay-Norris line, it's still not too late to get your share of the "Million."

Ask the next A. E. A. Jobber's Salesman who calls to give you all the details of "One Salesman—One Dealer—One Million."

McQuay-Norris Manufacturing Co.
General Offices, St. Louis, U. S. A.
Connorsville, Ind. Toronto, Canada

McQUAY-NORRIS PISTON RINGS PISTONS PINS

FOR AUTOMOBILES - MOTOR TRUCKS - TRACTORS - STATIONARY GAS, OIL AND STEAM ENGINES - MOTOR BOATS
MOTOR CYCLES - AIRPLANES - COMPRESSORS - PUMPS - LOCOMOTIVES - STEAMSHIPS - REFRIGERATING MACHINES.

McQuay-Norris Wainwright Pistons and Pins

—gray iron pistons as light in weight as safety permits—specially designed for replacements—available in standard sizes and over-sizes—also in semi-finished form 75-thousandths over-size. Pins of exceptional accuracy. Made of special heat-treated steel.

Pistons and Pins
of quality

Leak-Proof—its exclusive design means equal cylinder-wall pressure at all points. Its greater flexibility means better performance in worn cylinders. Best for all grooves except top, which should have **Supercyl**. Made of Electric Iron. Each ring packed in a parchment container. Price per ring—

\$1.25

In Canada, \$1.50

Supercyl—stops oil lubricating oil out of combustion chamber. Collects excess oil on each down stroke of piston and empties on each up stroke, which ordinary grooved rings cannot do. Made of Electric Iron. Each ring packed in a parchment container. Price per ring—

\$1.00

In Canada, \$1.25

JIFFY-GRIP—the quick-seating ring with the non-butting joint. "Seats in a Jiffy." Can be fitted closer than the ordinary step-cut rings. Ends cannot butt when fitted tightly as quick-seating rings should be. Accurately made of Electric Iron. Each ring packed in glassine envelope. Price per ring—

50c

In Canada, 50c

Snap Rings—of the highest grade. Raised above the average by McQuay-Norris manufacturing methods. Made of Electric Iron. Their use insures all the satisfaction possible for you to get from a plain snap ring. Packed twelve to the carton and rolled in waxed paper. Price per ring—

25c

In Canada, 30c



It's here

A Revolutionizing Ignition System for Fords

*Big Intense Sparks,
Automatic Control,
Single Coil,
Waterproof,
More Speed,
More Power,*



*Here's the world beater for 1923.
A new, startling revelation in ignition
systems for Fords.*

The new **Bosch** **IGNITION**

at last

What every Ford Owner has wanted and every Dealer needed—

A Genuine Bosch Ignition System for Ford's that banishes all Ford Ignition ills in one sweep, for only \$12.75.

Here's the biggest value ever offered Ford owners—a wonderful new ignition system—big, rugged, dependable, efficient, waterproof—with automatic spark advance and many new features not found in any other ignition system. It's suitable for all Ford models—anyone can install it.

The sales opportunities are remarkable—the new business you can get—the added profits you can make during 1923 are advantages you can't afford to overlook.

Every Ford owner will want one—the price fits his pocket book. The Bosch reputation is the guarantee for Quality and Dependability—money back if you or your customer is not satisfied.

Single and quantity prices—a new Sales Plan. Write or wire for particulars—Don't miss this! If you are anxious to work fast, order five—immediately.

American Bosch Magneto Corporation
Springfield, Mass.

New York

Chicago

Detroit

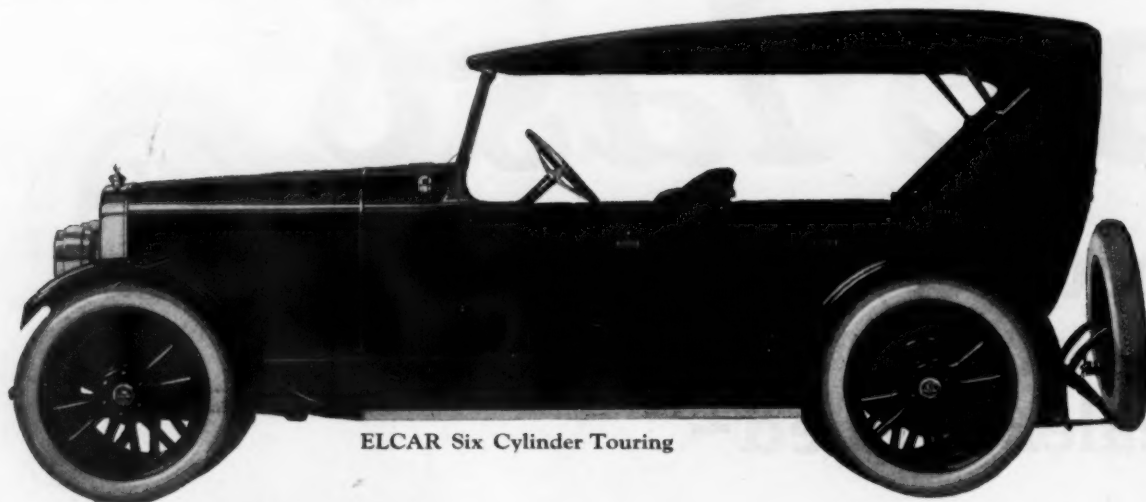
San Francisco



What It Does

- 1—Makes Starting Easy
- 2—Keeps Plugs Clean
- 3—Prevents "bucking"
- 4—Gives More Power
- 5—Saves Gas and Repairs
- 6—Banishes Timer Troubles
- 7—Pays for Itself
- 8—Stops short circuits
- 9—Reduces vibration
- 10—Cuts out Spark Lever

-Ford \$12.75 SYSTEM



ELCAR Six Cylinder Touring



Fours and Sixes

ELCAR

A WELL BUILT CAR

*The Completeness of the ELCAR Line Insures
Something to Sell All the Time*

DEALERS

This price range
insures PROFITS

FOURS

\$965 to \$1,425

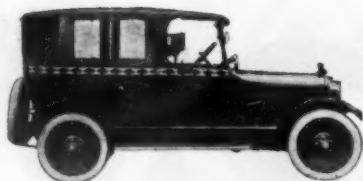
SIXES

\$1,395 to \$1,995

[f. o. b. factory]

Greater activity, wider field of prospects and more speed in closing sales—that's what the Elcar Line of Fours, Sixes and Taxicabs means to dealers. The Elcar dealer has something to sell all the time. The taxicab business is a powerful booster of volume and rounds out profit possibilities in the logical way. Investigate the Elcar dealer plan. There's always a good market for a good car honestly priced. Elcar Six is equipped with 8-R Continental Red Seal motor and other units of equal worth. Elcar Four has improved Lycoming-Elcar motor. Elcar bodies are all Elcar built.

*At the National Shows New York and Chicago
the complete new line of Elcars, Sixes and
Fours, was easily the outstanding feature*



Ask About ELCAR TAXICABS
Unusual Proposition • Quick Turnover

Write or Wire for the Facts

ELCAR MOTOR COMPANY, Elkhart, Indiana

Makers of Fine Vehicles Since 1873



It Works Like Magic

With three Lube-sters—one each for light, heavy and medium oils—your gasoline customer will be reminded that *he needs oil*, too. You will sell more by having it on display for immediate service. Find out more about this modern last-word equipment Bowser has built to increase your oil profits.

Write today for Booklet A-14
and "How to sell him oil, too"!

S. F. BOWSER & COMPANY, Inc.

Pump and Tank Headquarters

Home Plant: Fort Wayne, Indiana

Canadian Plant: Toronto, Ontario

Factories and Warehouses: Albany, Dallas, Milwaukee, San Francisco, Sydney

*Branch Offices, with Service Departments, in Principal Cities
in this Country and Abroad. Representatives Everywhere*

BOWSER
ESTABLISHED 1885
ACCURATE MEASURING PUMPS

BOWSER PRODUCTS for Handling Gasoline and Oils Wherever Sold or Used

Filling Station Pumps and
Tanks for Gasoline.

Portable Tanks for Gasoline
and Oil.

Storage and Measuring Out-
fits for Paint Oils, Kero-
sene and Lubricating Oils.

Power Pumps.

Dry Cleaners' Underground
Naphtha Clarifying
Systems.

Carload Oil Storage Tanks.

Richardson-Phenix Oil Cir-
culating and Filtering
Systems and Force Feed
Lubricators.

Rickenbacker

A • CAR • WORTHY • OF • ITS • NAME

The Car—

Now giving super-satisfaction from the Atlantic to the Pacific. 5,000 marketed the first year. Output trebled for 1923. More advanced engineering features than any other car on the market. Tandem flywheel vibrationless motor alone created a sensation this past year!

The Contract—

As unique as the car. Dealers get a five-year contract which cannot be cancelled without cause. We give dealers a square deal in writing and in co-operative performance. Unusual sales and service assistance. We make it possible for you to make money.

The Company—

All Rickenbacker executives are prominent figures. All grew up with and helped to establish the industry. Rickenbacker man-power is seasoned in every phase of the business. All administrative, production, engineering, financial, purchasing and sales departments heads are men whose names you have long been familiar with. Each man a star in his line.

Touring Phaeton—\$1485 Coupe—\$1885 Sedan—\$1985
f. o. b. Detroit

Rickenbacker Motor Company
Detroit Michigan





In Stock

not over a day away!



There's one of our 400 "Milwaukee" distributors near you, with a full stock of these great bearings. Maybe he's only an hour away. Wouldn't it pay to know?

It helps to have our handy Bearing Guide-Book which lists cars, trucks and tractors, with bearing stock numbers for each. Sure we'll mail you one, with the name of your nearest distributor. Write him—wire him—'phone him — and your wants are filled at once. What's your address?

"I want my car!"

Suppose he is unreasonable! Suppose he *did* clatter in with his crankcase full of babbitt and want the job done sooner than he had any right to expect! Arguments are all well and good, *but he wants his car.*

That's just where Milwaukee Bearing Service—"not over a day away"—comes in.

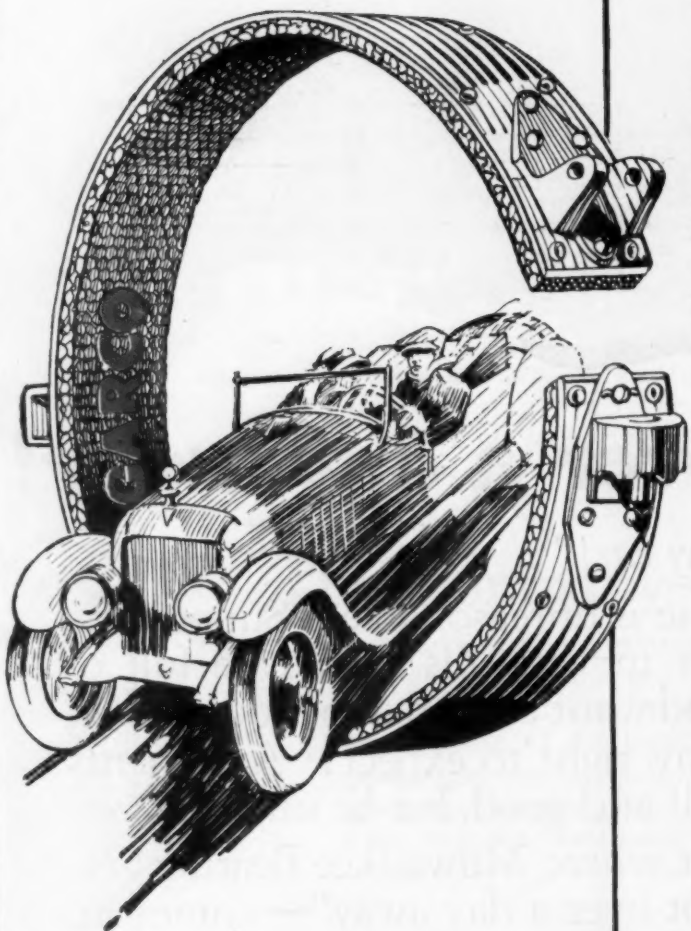
You can give him as fine a set of bearings as he ever had—start putting 'em in within a few hours after you call us — and what's also mighty, mighty important —

You can make a good profit on them.

MILWAUKEE DIE CASTING CO., Milwaukee, Wis.

MILWAUKEE BEARINGS

SAFETY



BRAKE Lining to be "SAFE" for the owner to buy and use should be above price.

Brake Lining to be "SAFE" for the jobber, dealer and service man to sell, should be the best the market affords.

Upon brake lining, depends not only human life, but business reputation. There is a moral as well as a business obligation.

The solid weave: the greater amount of asbestos: the specialization in asbestos textiles: the nation-wide acknowledgment of Quality — all these things contribute that element of SAFETY and satisfaction which makes GARCO SAFE for the owner and profitable to the Trade.

GENERAL ASBESTOS & RUBBER CO.

Main Offices and Factories:
Charleston, S. C.

Branches:

New York: 296 Broadway
Chicago: 14 North Franklin St.
Pittsburgh: 311 Water St.



GARCO

ASBESTOS BRAKE LINING



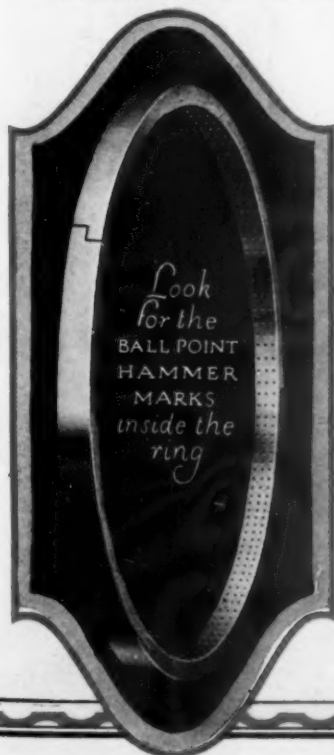
"Here's a Job that will Please My Customer"

"When we put in American Hammered it's a permanent repair. These leakless rings mean the end of wasted power and piston ring troubles—and that's the kind of service my customers want."

Dealers in all parts of the country are making friends and money by handling American Hammered Piston Rings. Leading distributors carry them because they know there is a public demand for these leakless rings. You can get any size or oversize without delay or trouble.

Ask your jobber.

Factory List Prices **60c**
Up to 4 $\frac{3}{4}$ Inches
To Fit Fords . . . **50c**
To Fit Chevrolets . . . **50c**
No extra charge for oversizes



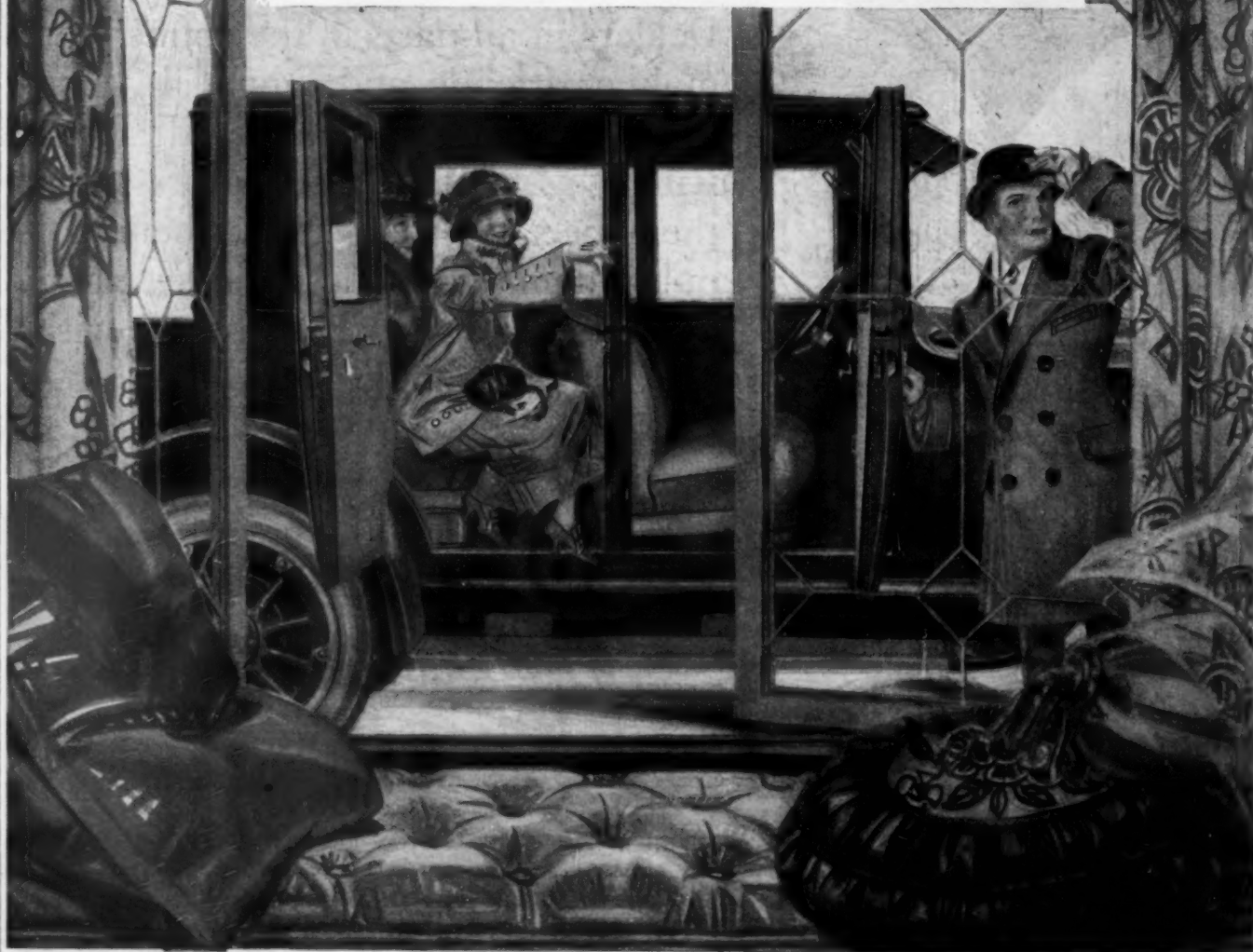
American *Hammered* Piston Rings

AMERICAN HAMMERED PISTON RING COMPANY, Baltimore, Md.
Export Department, 461 Eighth Avenue, New York, U. S. A.

WILLYS-

Instant Success

THE Coupe-Sedan, an entirely new and original Willys-Knight body creation of steel, beautiful in line and appointment, created a profound impression at the shows and registered an instant success throughout the country. It is powered by the motor that *improves with use*. It is typical of the advanced design and unequalled value that characterize the new Willys-Overland line.



KNIGHT

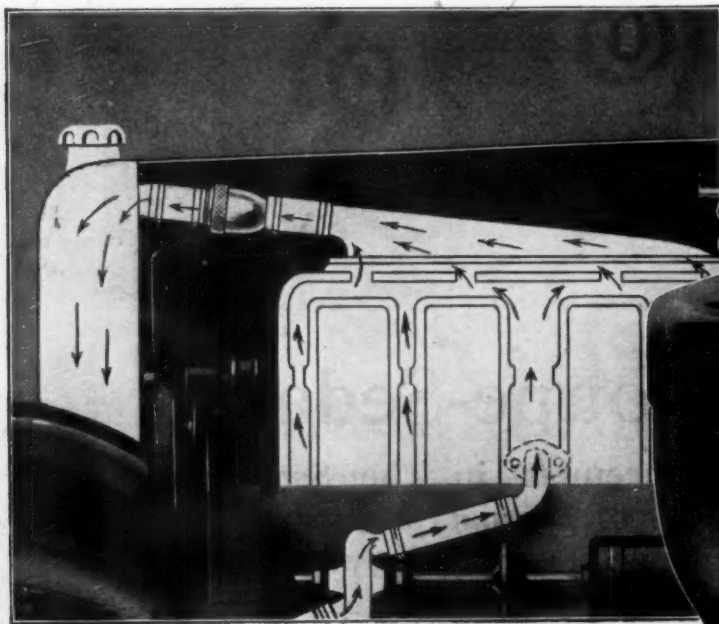
The Coupe-Sedan

THIS announcement in The Saturday Evening Post of February 3rd is an example of the powerful advertising with which Willys-Overland is helping dealers build business. The Willys-Overland Franchise is valuable in every locality. Write today for complete details.

WILLYS-OVERLAND, INC., TOLEDO, OHIO
WILLYS-OVERLAND LTD., TORONTO, ONT.



Illustration shows Bishop-Babcock Aquastat attached to hose between the engine and the radiator. Can be put on in ten minutes



The Bishop-Babcock Aquastat. About one-half actual size. Weight, 10 ounces. Made of brass and polished aluminum, handsomely finished. Made with 1 1/4 and 1 1/2 inch openings. Easily attached and detached. Simple, positive, automatic; nothing to get out of order. Absolutely guaranteed. Retail price, \$10.00

Spitting and backfiring checked—engine warms up in 1/4 time

IN December the Bishop-Babcock Aquastat was announced to the automotive trade and the public. Today thousands are in use—motorists are talking about them, dealers are selling them, leading automotive engineers have given them their approval.

Thousands of automobile and truck owners have ended serious cold weather driving trouble—with the Bishop-Babcock Aquastat. Slow starting, flooding the engine with gas, the constant use of the choke, sputtering and stalling during the first half hour after starting, oil dilution, excessive carbon, poor combustion—all have been eliminated, or greatly lessened.

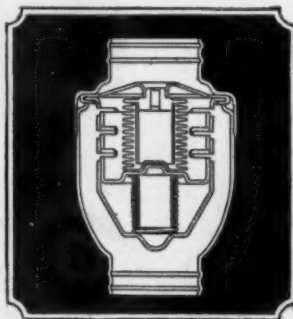
What is the Aquastat?

The Bishop-Babcock Aquastat is a simple, automatic, thermostatically-controlled valve which regulates the flow of water through the cooling system on all cars using circulating pumps.

It is positive in its operation. When the water is cold, it closes and holds the water around the combustion chamber until it is heated to a certain temperature. Then it opens, letting the hot water into the radiator and taking in additional cold water.

Thus, the walls around the combustion chamber and cylinders are quickly heated. The vaporized gasoline has no opportunity to recondense, dilute the cylinder oil and form carbon. Practically all the fuel is burned. Fuel savings ranging from 15 to 35 per cent have been effected.

To reduce the possibility of freezing, water in the radiator must be agitated or kept in motion. The Aquastat meets this need. It allows a 10% seepage at all times. Thus the trouble caused by the "by-pass" type of water control is entirely avoided. As soon as the engine starts, agitation of the radiator water begins and this danger of freezing is eliminated.



Cross section of Bishop-Babcock Aquastat. Valve is perfectly balanced, and is operated by an expanding multilex bellows, charged with a thermostatic fluid, and counteracted by a spring which holds the valve almost fully closed until temperature reaches a certain predetermined point

Easily installed in 10 minutes

The Bishop-Babcock Aquastat can be attached in ten minutes. Just cut the hose between the cylinder block and the radiator and clamp it on. It is entirely automatic in its operation and adjusts itself to seasonal requirements. In hot weather the valve is wide open.

The Bishop-Babcock Aquastat is manufactured by the Bishop & Babcock Company, leading manufacturers of heating appliances. Its principle is identical with the principle employed in the thermostatic traps for heating installations in large buildings.

This principle has also been applied successfully in the higher-priced automobiles for a number of years.

Investigate the Bishop-Babcock Aquastat. We will gladly supply additional information.

Write for details to The Bishop & Babcock Company, Automotive Specialties Division, Cleveland, Ohio.

Retail \$10.00 price, **\$10.00**

Bishop-Babcock AQUASTAT

Two hose sizes, 1 1/4" and 1 1/2"

FORBES for January 6, 1923



A Better Value For Winter

The 1923 Buick Open Cars

Buick open cars bring a comfort and convenience to winter driving, surpassed only by the more expensive closed models.

Close fitting curtains, that open with the doors, are provided with a weather strip of special design to seal their joints. The tight fitting windshield is adjustable from the inside, and with the curtains, insures a snug and cozy interior.

A more satisfying sense of safety is found in the wide visibility that the curtain design affords and in the signal pocket for the driver.

Combining this weather protection with the traditional Buick performance completes a value in a

The Buick Line for 1923

Comprises Fourteen Models:

Four—2 Pass. Roadster, \$245; 3 Pass. Touring, \$285; 3 Pass. Coupe, \$1175; 3 Pass. Sedan, \$1295; 5 Pass. Touring Sedan, \$1525; Six—2 Pass. Roadster, \$1175; 3 Pass. Touring, \$1195; 3 Pass. Touring Sedan, \$1225; 5 Pass. Sedan, \$1465; 5 Pass. Touring, \$1425; 7 Pass. Sedan, \$2195; Sport Roadster, \$1825; Sport Touring, \$1875. Priced as shown.

There is Always a Buyer For Any Buick

The uniformly high value of used Buick cars in all parts of the country has a double significance. It proves the public regard for Buicks—the readiness with which both new and old Buicks find purchasers. And it also proves the dependable, continued and enduring qualities of Buick performance. Why not have your name on file?

BUICK MOTOR COMPANY, FLINT, MICHIGAN
Division of General Motors Corporation

Pioneer Builders of
Valve-in-Head Motor Cars



Branches in All
Principal Cities



Bang! "There goes my test set" No harm done - it's an Allen-Bradley!

TEST sets are not supposed to be thrown on the floor, but accidents happen in the best of shops.

The Allen-Bradley test set is ruggedly built. The graphite discs of the rheostat are inclosed in a steel tube. The meters, built for battery station work, will stand exceedingly rough treatment.

A dependable and rugged test set is your best insurance against poor service. Buy an Allen-Bradley test set, today, and be insured.

BATTERY testing is a mystery to nearly every car owner. He never is sure that your recommendations are correct.

The Allen-Bradley test chart is a convincing, profit-making wall chart furnished with each Allen-Bradley test set. Make your test and show your customer on the chart why his battery needs repairs or why he should buy a new one.

Install the Allen-Bradley test set and increase the number of satisfied customers. Act now!

REMEMBER—The well equipped shop gets the business.

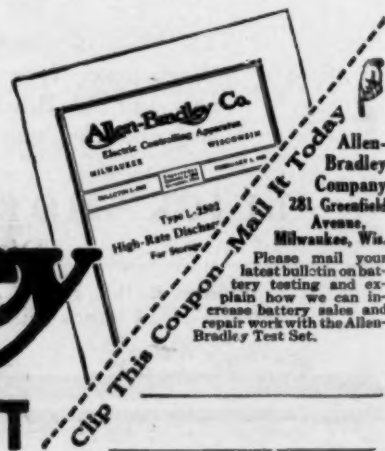
Allen-Bradley Co.
Electric Controlling Apparatus

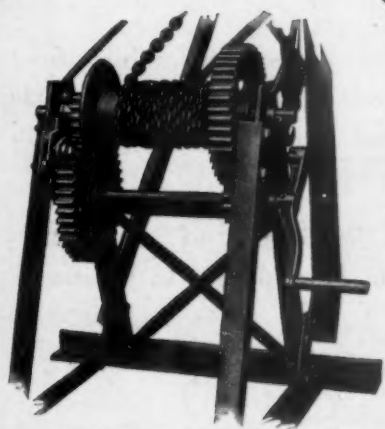
281 Greenfield Ave.

Milwaukee, Wis.

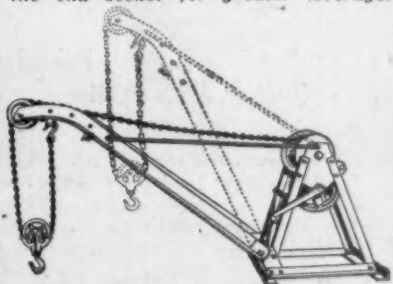
Allen-Bradley

TYPE L-2502
HIGH-RATE DISCHARGE TEST SET





The lower, auxiliary shaft revolves the drum three and a half times faster than the upper shaft and is used in adjusting the chain to the load. The upper shaft supplies sufficient leverage to enable the operator to lift the heaviest passenger car with ease. Note the design of the crank, the center socket for greater speed and the end socket for greater leverage.



One man can readily adjust the boom to any of four different heights, by inserting the side rods in the proper holes near the end of the boom, according to the requirements of the individual job.

Make your tow-in jobs yield a better profit with this new **WEAVER Auto Crane**

TOW-IN jobs are mighty profitable if you handle them right. Not only are the fees for this service well worth while, but the additional repair work it brings in will keep your shop running to capacity when other shops are losing money during the "off season".

This new Weaver Auto Crane is built to handle the toughest tow-in work with a minimum expenditure of time and labor. Its simplicity, ease and speed of operation, ample strength with comparative lightness, and moderate price are outstanding features which will appeal to every garageman.

Note the double back gear construction which provides two distinct leverages, one for speed, the other for power, and the adjustable boom, illustrated at the left. These are only two of the many unique features of our new Auto Crane, fully described in our new circular which we will be glad to mail you upon request. Start on the road to increased profits by writing for your copy now.

WEAVER MFG. CO.

SPRINGFIELD, ILLINOIS, U.S.A.
CANADIAN FACTORY, CHATHAM, ONTARIO.

for Economical Transportation

The Value of a Franchise

The value of a retail franchise in the automobile business depends on:

1. Salability.
2. Margin.
3. Relations with the manufacturer.

Statistics prove that salability is largely affected by price: about 80% of all cars in use sold for less than \$1,000.

Value per dollar is the second most important factor in salability.

Public knowledge of the value is the third.

Chevrolet is within the price class of the great 80% market.

Chevrolet offers the most per dollar in value in this class.

Chevrolet Motor Company is seeing to it that the public knows the facts.

In the entire automobile field Chevrolet has within a year jumped from seventh to second place in sales.

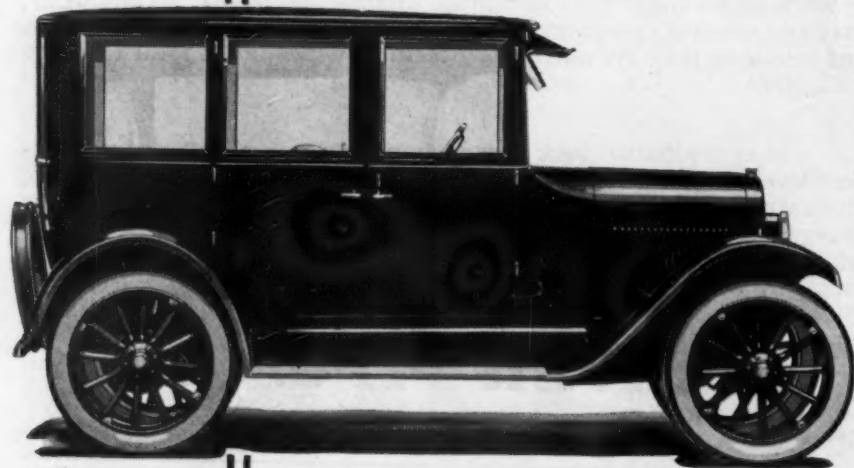
The significance of these facts should be apparent to the trade.

Chevrolet Motor Company

Division of General Motors Corporation

Detroit

Michigan



The World's Lowest Priced Quality Automobiles

Two Passenger Roadster . .	\$510
Five Passenger Touring . .	525
Two Passenger Utility Coupe	680
Four Passenger Sedanette . .	850
Five Passenger Sedan . . .	860
Light Delivery	510

All Prices f. o. b. Flint, Mich.

There are now more than 10,000 Chevrolet dealers and service stations throughout the world.

Applications will be considered from high-grade dealers in territory not adequately covered.

This Belt Goes on the Car and



This One Goes in the Tool Box



The Package that "Carries a Spare" to Sell a Spare

The Package

This new Gilmer package for the new Gilmer belt puts the "Carry a Spare" idea over stronger than ever. It allows you to sell *two* belts where you sold but one before.

Here are two new Gilmer Super-Service Belts held together by narrow blue bands. The first belt goes on the car. The second is the spare. It is attractively sealed in a glassine envelope to keep it clean until used.

The New Belt

The new Gilmer Super-Service Fan Belt is built on a new principle. It is light in construction. Exceptionally flexible. True in performance. And the toughest belt that ever drove a fan.

It is designed for those motorists who want an ultra-fine belt—and are willing to pay a trifle more for it. The new Gilmer belts plus the old Gilmer belts give you an assortment that meets all requests.

The metallic finish that adds so much to the appearance of the new belt is a result of the new process of manufacture. It is an engineering achievement, giving the belt greater resistance to heat, oil and water.

LIST PRICES For Ford Cars, 60c For All Other Cars, 90c

This Shows the Actual Use of RADIATOR LACING



This display stand is shaped like the front of a car, with the hood up. Actual Gilmer Radiator Lacing is placed around the radiator and cowl.

Gilmer Radiator Lacing is now packed in individual cartons. Each carton holds just enough for one car. This new Gilmer idea is selling a lot of lacing. If you don't carry it, get your order in at once. Get the display stands, too! Ask your jobber about Gilmer Radiator Lacing—and the display stand. Write him to-day.

L. H. GILMER COMPANY
Philadelphia

Gilmer



It's a Gilmer Product
—you can depend on it



Fanwise Construction—showing how the layers of fabrics are built up, leaving the strands of fabric in each layer running in a different direction



Cushions every shock—needs no lubrication or adjustment

Why the Thermoid-Hardy disc of Fanwise Construction is fast replacing metal universals

EVERY time a car is started the strain of the entire load must fall on a single part—the Universal Joint.

No wonder flexible fabric discs are now taking the place of metal universals—eliminating backlash, jerks and rattles, transmitting a smooth, even flow of power.

The thing that has made the fabric joint practical is the Thermoid-Hardy basic patent on Fanwise Construction.

It has added to flexibility *enormous strength*. Strength tested to stand the strain of a torsional twist of 21,000 pounds. Strength that enables the Thermoid-Hardy Joint to go 60,000 miles on the heaviest trucks, over the roughest roads—without lubrication or adjustment!

In the illustration above the vital importance of Fanwise Construction is clearly shown. Notice how the strands in each layer of the Thermoid-Hardy disc run in different directions. The result is an even stress at every point—an equal strain between every pair of bolt holes.

It is this unique construction that is responsible for the enormous strength of the Thermoid-Hardy disc. It not only eliminates whipping and vibration—it means that the shaft is held in true on every revolution.

The Thermoid-Hardy disc marks a long step forward in automobile construction. Metal universals that need constant attention and that transmit every shock of the road are fast being displaced.

You should have this book

We have prepared a book, "Universal Joints—Their Use and Misuse," that treats the whole subject from all its angles—the mechanical principles involved, construction, lubrication, process of manufacture, tests for strength, and records of performance. Send for your copy today.

THERMOID RUBBER COMPANY

Sole American Manufacturers

Factory and Main Offices: Trenton, N. J.

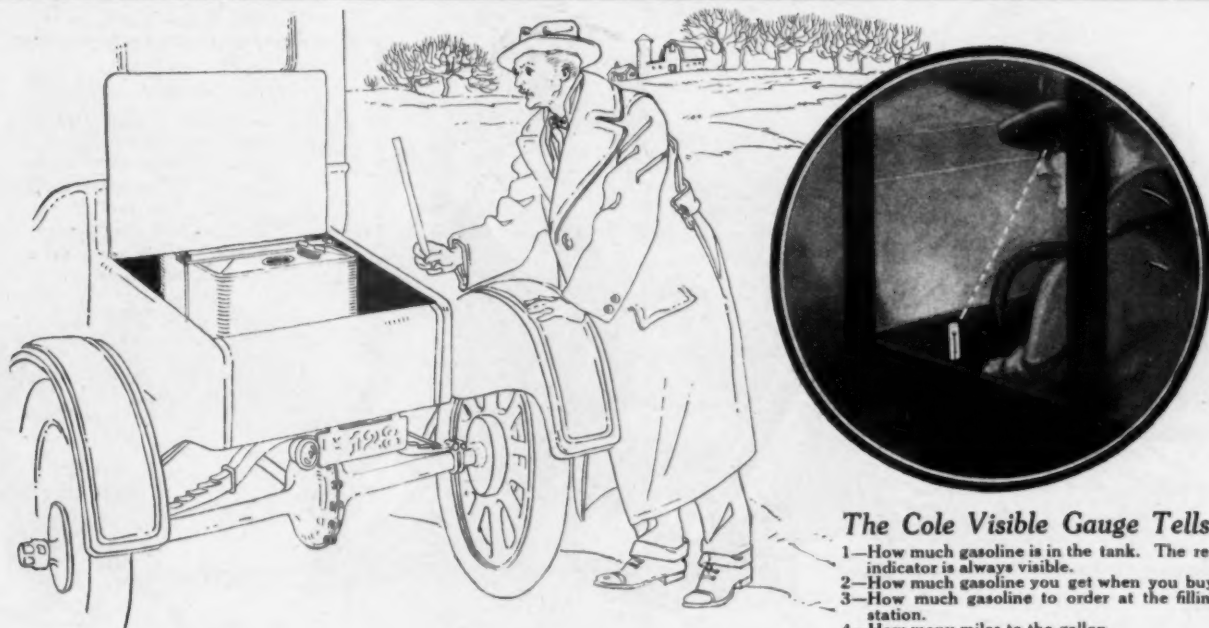
New York Chicago Los Angeles Detroit Cleveland
Kansas City Seattle Atlanta Boston London Paris Turin

THERMOID-HARDY UNIVERSAL JOINT

*Makers of "Thermoid-Hydraulic Compressed Brake Lining"
and "Thermoid Crolide Compound Tires"*

LIST OF USERS

American British Mfg. Co.
Allis Chalmers Mfg. Co.
Anderson Motor Co.
The Autocar Co.
Available Truck Co.
Barley Motor Car Co. (Roamer)
Crow-Elkhart Motor Corp.
Jas. Cunningham Son & Co.
Dart Truck & Tractor Corp.
The Dauch Mfg. Co.
Diamond T Motor Car Co.
Doane Motor Truck Co.
Elgin Motor Car Corp.
Elgin Street Sweeper Co.
Fageol Motors Co.
Fifth Ave. Coach Co.
H. H. Franklin Mfg. Co.
Garford Motor Truck Co.
Gramm-Bernstein Motor Truck Co.
Handley Knight
Hawkeye Truck Co.
Hendrickson Motor Truck Co.
Highway Motors Co.
Holt Mfg. Co.
Indiana Truck Co.
International Harvester Co. of A., Inc.
International Motor Co.
Jackson Motors Corp.
Kelsey Motor Co.
Kelsey Wagon Mfg. Co., Inc.
Kenworthy Motors Corp.
King Motor Car Co.
King Zeitler Co.
Lakewood Eng. Co.
Larrabee-Deyo Motor Truck Co.
Lexington Motor Co.
Locomobile Co.
Menominee Motor Truck Co.
Mercer Motors Co.
Moreland Motor Truck Co.
McFarlan Motor Co.
Nelson & LeMoon
E. A. Nelson Automobile Co.
Nelson Motor Truck Co.
D. A. Newcomer Co.
O'Connell Motor Truck Co.
Oliver Tractor Co.
Oneida Motor Truck Co.
Packard Motor Car Co.
Parker Motor Truck Co.
Patriot Motors Co.
Reliance Motor Truck Co.
Reo Motor Car Co.
Reynolds Motor Truck Co.
Root & Van Dervoort Eng. Co.
Sanford Motor Truck Co.
Southwark Fdy. & Mach. Co.
Sprague Electric Co.
Stoughton Wagon Co.
Studebaker Corp.
Stutes Mar Tractor Co.
Templar Motors Co.
Tioga Steel & Iron Co.
Towmotor Co.
Traffic Motor Truck Corp.
Transport Truck Co.
Twin City Four Wheel Drive Co., Inc.
United Motors Co.
Walter Motor Truck Co.
Ward La France Truck Corp., Inc.
Watson Products Corp.
Geo. D. Whitcomb Co.
Wichita Motors Co.
H. E. Wilcox Motor Co.
I. C. Wilson Co.
Willys-Overland, Inc.
Zeitler & Lamson
Truck & Tractor Co.



The Cole Visible Gauge Tells:

- 1—How much gasoline is in the tank. The red indicator is always visible.
- 2—How much gasoline you get when you buy.
- 3—How much gasoline to order at the filling station.
- 4—How many miles to the gallon.

Now He'll Buy a Gasoline Gauge

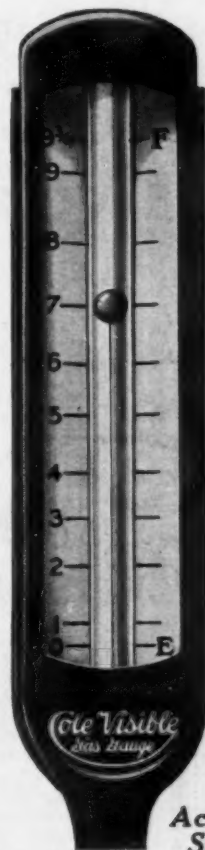
Lonely road—dry tank. A Cole Visible Gasoline Gauge would have saved him that walk to a filling station.

A Cole Visible Gauge on the Ford instrument board is like a string around the finger. The driver constantly sees the little red indicator—he can't forget to fill the tank.

Fits any Ford. Installed in less than an hour. Handsome, scientifically accurate. Mechanically operated—can't get out of order. Made by the company that makes special model visible gasoline gauges as standard equipment on sixteen well-known automobiles.

Model A made in four styles: for touring car or roadster, for 2-door sedan, for coupe, for 4-door sedan.

Join the big list of dealers and jobbers who are making money fast with this quick-selling Ford necessity.



Actual Size

\$6.00
Guaranteed
for
One Year

**COLE VISIBLE
GASOLINE GAUGE**

Made Especially for Ford Cars

"Read as You Ride"

Send the Coupon

Get our money-making proposition. Every Ford owner needs the Cole Visible Gauge. Sell them all. Ask us today for the big interesting story.

The Stemco Engineering Co.

Light Car Division

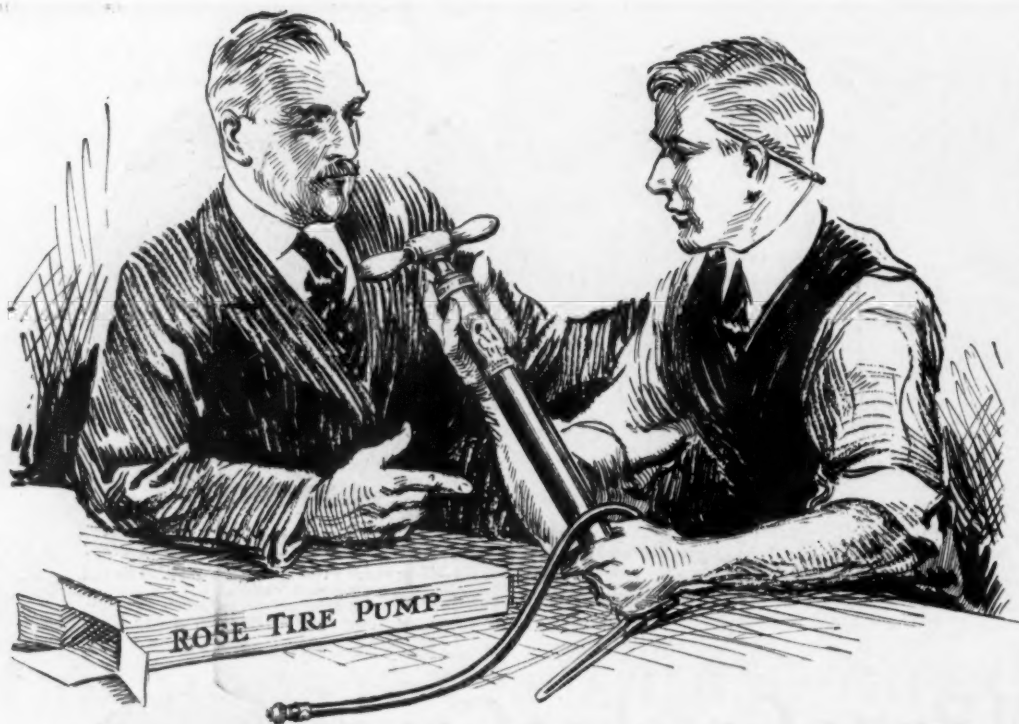
205-215 Webb St., Dayton, Ohio

The Stemco Engineering Company
205-215 Webb Street
Dayton, Ohio

Send me your circular describing the
Cole Visible Gasoline Gauge and tell
me about your liberal dealer offer.

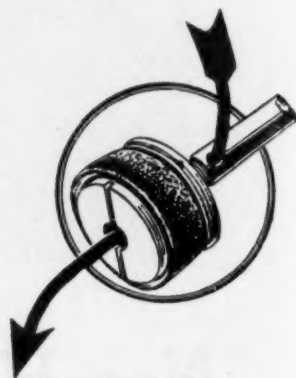
Name _____

Address _____



The feature that made the Rose America's leading Tire Pump is its patented valve. It makes pumping easy.

On the up-stroke the air follows the path of the arrow below. Compression starts instantly on beginning the down-stroke. You get 100 per cent results for the energy you spend. It is easy to understand Rose popularity.



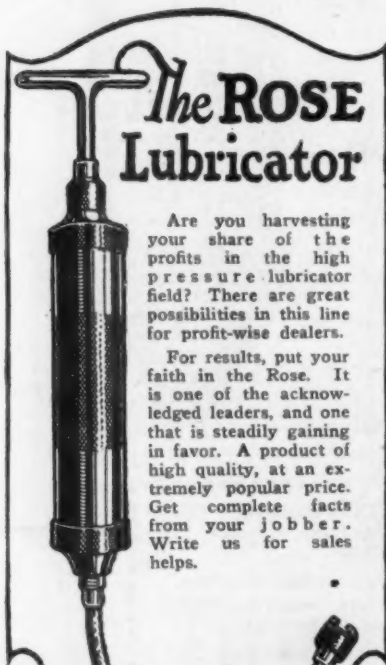
Tell 'Em About the Rose Valve and You'll Sell 'Em

Joe, the Rose Tire Pump is one of our most profitable lines and I want you to know how to sell it.

In the first place remember this: everybody hates to pump tires so the pump you sell 'em must be a labor saver.

Tell them that the Rose cuts the work of pumping in half. It's the patented valve that does it. Every ounce of energy applied to the grip is turned to pounds of pressure in the tire because there is no leakage and no lost motion. You don't have to go into detail—that's tiresome. But never fail to tell them there is a valve and what the valve does. That is interesting to them. They are looking for a way to get out of work and it is up to you to show them how they can do it.

Also point out the excellent construction throughout. There is a five-year guarantee on every pump but in all the time I have been selling the Rose I have yet to see one pump that has not lived far beyond its guarantee. We like to push popular lines in this store. So ask 'em to buy a Rose.



The ROSE Lubricator

Are you harvesting your share of the profits in the high pressure lubricator field? There are great possibilities in this line for profit-wise dealers.

For results, put your faith in the Rose. It is one of the acknowledged leaders, and one that is steadily gaining in favor. A product of high quality, at an extremely popular price. Get complete facts from your jobber. Write us for sales helps.

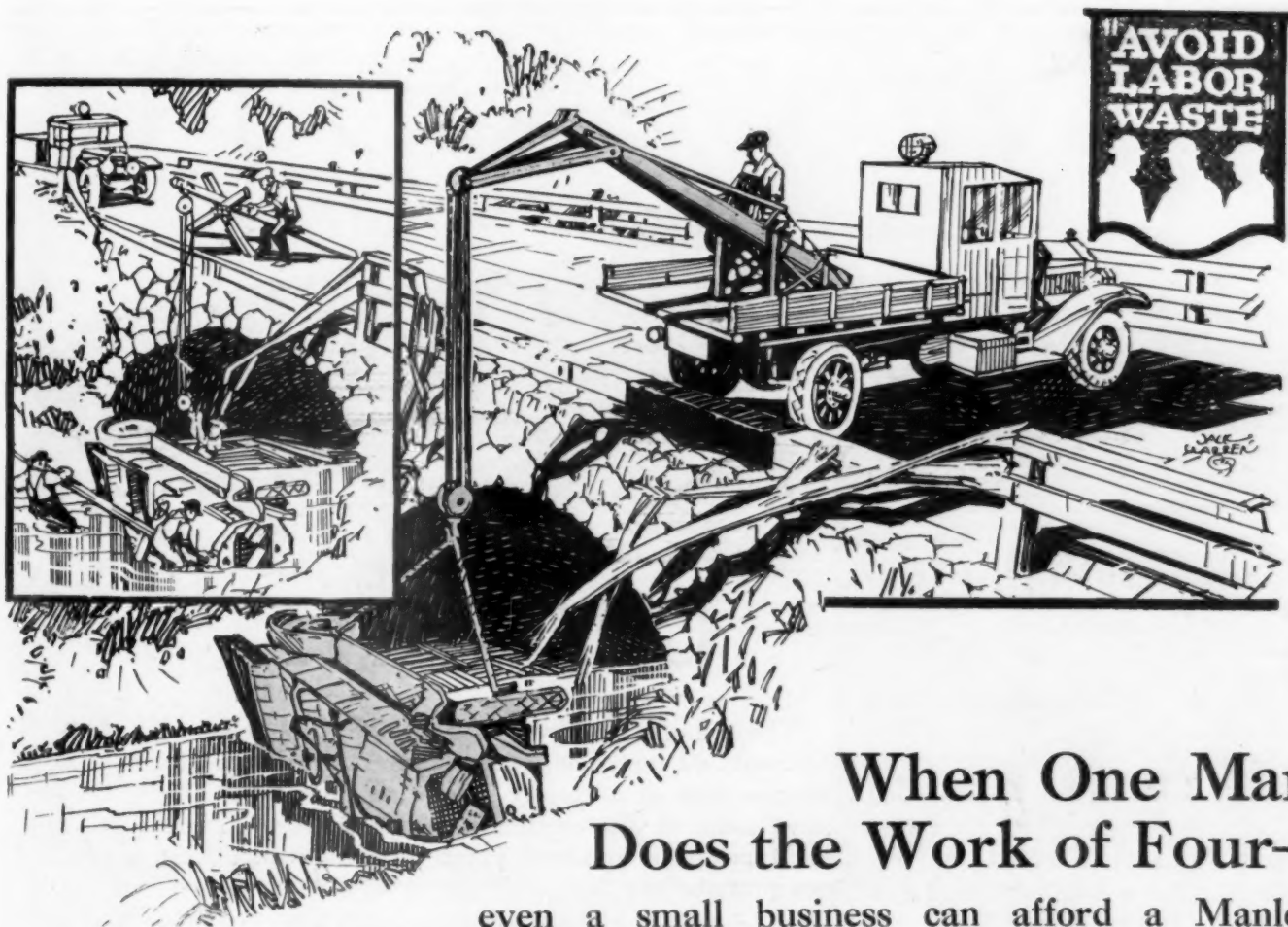
ROSE

TIRE PUMP



MANUFACTURED BY FRANK ROSE MFG. CO., HASTINGS, NEBR.





When One Man Does the Work of Four— even a small business can afford a Manley Wrecking Crane because it pays for itself so soon

Pays for itself because a *four* man job becomes a *one* man job and because it enables a small business to handle *big* business without extra help.

The reason why

The Manley Wrecking Crane has exclusive and patented features which place it far ahead of any other.

Its safe, rigid, double trussed beam tilts to any required angle to suit any and every kind of a job.

The removable top extension allows a shorter hitch. This is a tremendous advantage—and by tilting the beam to vertical position the hoisting drum is positioned so you can use the Crane as a winch.

By removing six bolts it can be immediately converted into a portable shop crane. Its high lift—deep overhang—low base and light weight—makes it doubly efficient beyond question.

A leading shop man of Philadelphia says: "I couldn't possibly run my business without it."

The toughest job is easy with the Manley Wrecking Crane—you can get business that the less fortunate "other fellow" cannot handle. You can make big money doing it.

Wrecking jobs pay big fees—and with a Manley Crane you can take care of them efficiently and speedily.

The Manley Crane will handle any kind of a job—we don't care what it is.

"The well equipped shop
gets the business" with

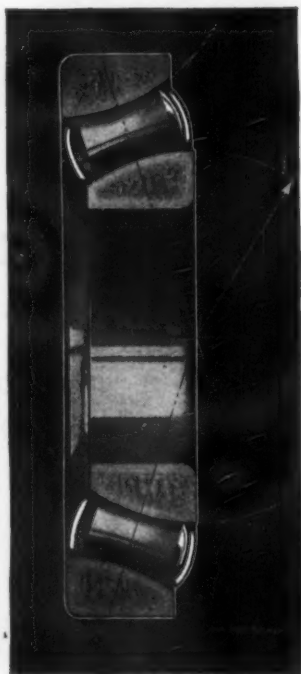
Manley
Garage Equipment
MADE IN YORK PA.

MANLEY MFG. CO., York, Pa.

You may send me the name of your nearest distributor and full information regarding the shop equipment checked below:

- | | |
|---|---|
| <input type="checkbox"/> Wrecking Cranes | <input type="checkbox"/> Engine Stands |
| <input type="checkbox"/> Portable Floor Cranes and Hoists | <input type="checkbox"/> Garage Jacks |
| <input type="checkbox"/> Garage and Arbor Presses | <input type="checkbox"/> Portable Garage Light |
| <input type="checkbox"/> Towing Trucks | <input type="checkbox"/> Air and Water Stations |

Pin This Coupon To Your Letter Head or Bill
Head and Mail Today



GROWTH

The popular approval of Shafer Roller Bearings necessitated increasing the manufacturing capacity to take care of a rapidly increasing demand. The new home of Shafer Bearings represents the highest type of a modern plant and manufacturing equipment.

Shafer Bearings are different from all others—they offer a new combination of standard mechanical principles. The concave rollers are set at an angle and travel between a convex cup and cone (which are true segments of a sphere) and absorb loads from any direction, radial or thrust. They are self-aligning. Pinching and binding possibilities, which commonly cause breakage, are eliminated. A long life of perfect service is the result.

Shafer Roller Bearings are easily adjustable for wear and fully guaranteed. Shafer service distributors dot the continent—there is one near you. Write for his name.

Shafer Bearing Corporation

6501-99 West Grand Ave.

Chicago

SHAFFER

Self-Aligning ROLLER BEARING

SPECIAL OFFER

Money-back Guarantee

Handy Ben
TRADE MARK
VISIBLE

The Always-Busy
OIL SALESMAN

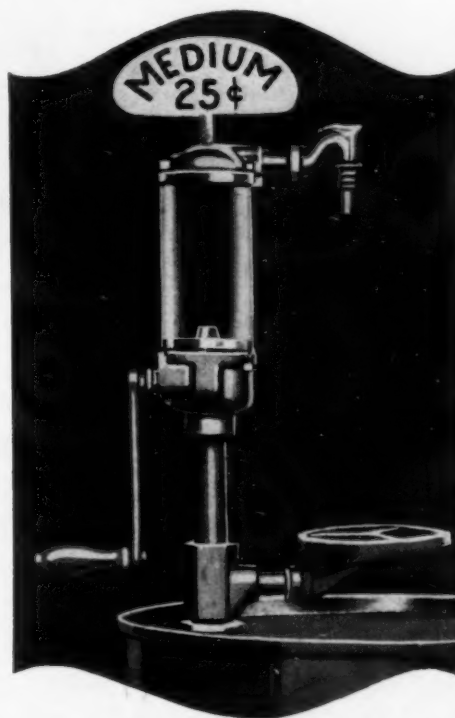
Make a real business of selling oil and alcohol. You can build up a surprisingly large volume of selling with up-to-date equipment.

Other dealers are doing it. If we stated figures you wouldn't believe them. The best way is to experiment, and prove to yourself that we make no overstatement. You can do so without a cent of loss—on the contrary, with much extra profit.

HANDY BEN fits any oil drum. Just set him in and tighten the nuts. No extra equipment to buy. He makes any oil drum a quick-acting silent salesman. Well-made; he'll last your business lifetime. Try him out for thirty days, and see how much of his cost he has repaid in extra sales.

Clip the coupon now, and start him working for you immediately.

Bennett Injector Co.
Muskegon Mich.



ONLY
\$12.75

If you take advantage
of this special offer



Special Trial Offer Coupon

SIMPLY fill in the name of your oil or accessory jobber on this blank, and enclose your check or money order for \$12.75. Prompt shipment will be made. Your money refunded if you are dissatisfied for any reason in 30 days.

Ship to.....

Address.....

City.....

State.....

Jobber's Name

Address



Motor Wheel
PRODUCTS

Motor Wheel

From acreages of standing timber under direct Motor Wheel control comes the hickory for our truck wheels.

In Motor Wheel kilns and mills this fine wood is seasoned and shaped.

Even metal parts for wheels we build come from Motor Wheel plants.

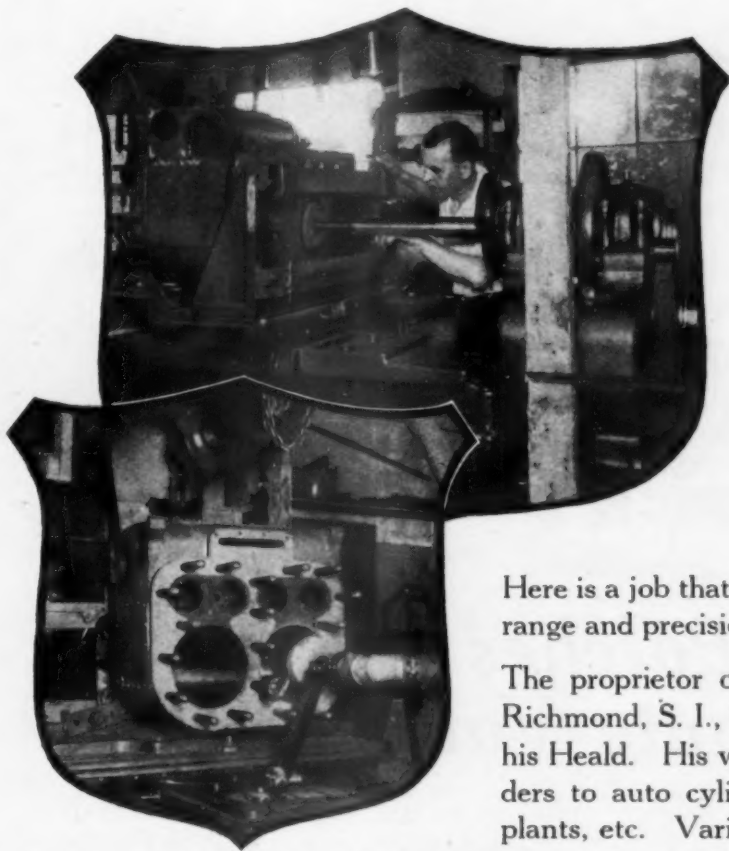
Such excellent basic material, with Motor Wheel design, methods of assembly and finish assures truck wheels immune to vibration, thrust and exposure.

We build more truck wheels of all types than any other maker.

MOTOR WHEEL CORPORATION, LANSING, MICHIGAN

Motor Vehicle Wheels Complete — Metal Stampings — Steel Products
Gier TUARC and Gier-LEWIS Steel Wheels

TRUCK Wheels



A Regrinding Shop

Which Cut
"Uncle Sam's" Time
Limit in Half

Here is a job that supports our broadest claims for speed, range and precision of Heald Cylinder Grinders.

The proprietor of the Richmond Machine Shop, Port Richmond, S. I., has been a busy man since he installed his Heald. His work has ranged from motorcycle cylinders to auto cylinders, truck blocs, motor boat power plants, etc. Variety for a certainty, but listen to this—

A Winton Six Cylinder, Heavy Duty, 125-H.P. Engine, the property of the U. S. Navy, came to the Richmond shop to be ground. These cylinders were cast two en bloc and each set weighed 700 pounds. The bores were 8 inches in diameter and 21 inches long. The condition of these cylinders was such that it was necessary to remove .030 in. stock.

A time limit of 6 hours had been set on this job by the Government, but the Heald did the work to the Navy's taste in 3 hours. No special fixtures were used, as the Heald Universal jig was designed to cope with just such rugged work.

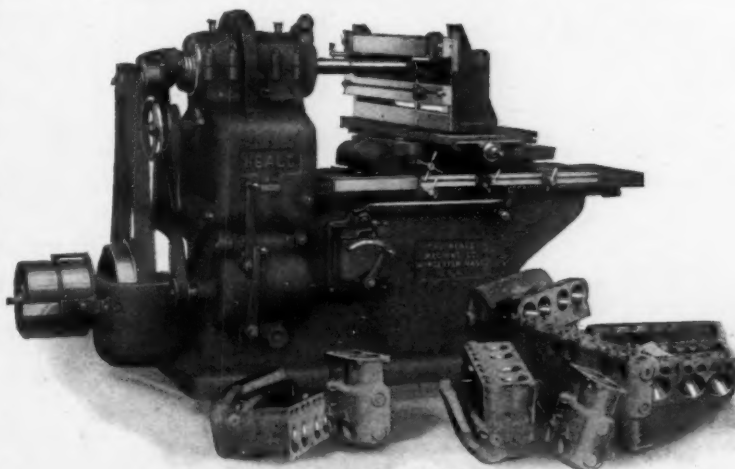
If you are considering putting in a machine for handling this work the Heald will not only do all that is asked of it but more. Further than that motor owners are now insisting on Heald ground blocs for they know that it is the machine used exclusively by all manufacturers and naturally they want the same finish in order to get the original efficiency of their engine when regrinding.

The spring work will soon be here. If you want your share start an inquiry towards Worcester at once. This is especially true if you are running a garage or repair shop for there is nothing that will bring you in a higher percent for the money invested, more new customers, and satisfied old ones than a Heald Grinder.

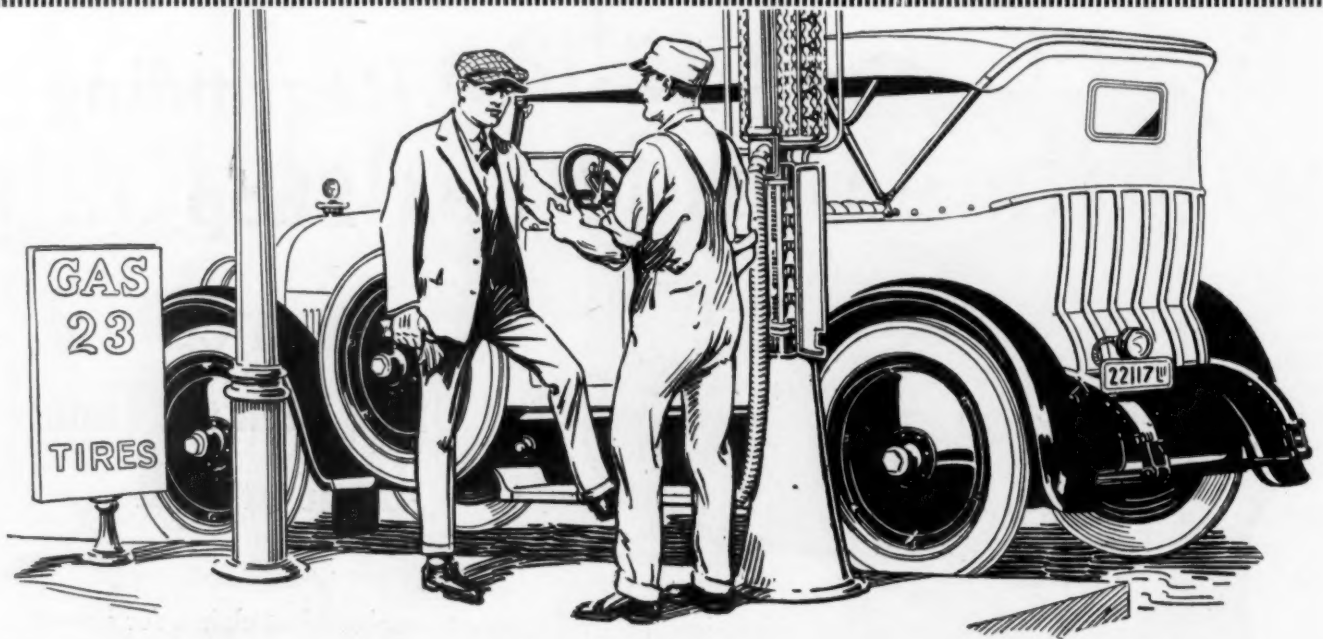
The Heald Machine Co.
61 New Bond St.

Worcester,

Massachusetts



Heald Regrinding Machine ready for work



“Got Plenty of Patches for Your 5 Minute Vulcanizer?”

It's an easy question to ask while you are selling gas or changing a tire or loaning a pair of pliers. It's the easiest way to “ask 'em to buy.” If the driver has a Shaler 5-Minute Vulcanizer he is likely to be almost out of

patches to use with it and he will welcome the suggestion. If he is one of the few who doesn't have a vulcanizer he'll say so and give you the easiest kind of an opportunity to make a sale.

Remember How Pleased You Were

With Your First **SHALER** ***Vulcanized Repair?***

Without doubt this is one of the most popular accessories on the market today. Of course *you* know that anyone can use it to make permanent tube repairs on the road in five minutes. You know how pleased you were the first time you used one and saw it *vulcanize* as quickly as you could stick on a temporary patch. Pass your experience along to your customers, especially the tourists, and cash in on the sales of patches that always follow the sales of vulcanizers.

Window Display Material—FREE—on Request

Signs, cards, cutouts, posters, everything you need to make a fine display on your counter or in your window, are yours for the asking. Also circulars to mail out.

Ask for them.

C. A. SHALER CO., 208 Fourth Street, Waupun, Wis.

You Can Purchase a Curtis with the Confidence It Is Right

Confidence because it is a product of experience, a reliable, tried and proven article—because CURTIS Engineers first recognize, then study and solve basic problems. The correctness of CURTIS' design has been proven repeatedly by the later adoption of these self-same CURTIS features by others. CURTIS Compressors are built to render steady service with a minimum operating expense. A few reasons why—

- 1 Controlled Splash Oiling System, originated by Curtis. This patented feature prevents an excess of oil getting into discharge line. At the same time perfect lubrication is assured. Curtis will run many times longer on the same amount of oil than ordinary splash oiling compressors.
- 2 Hand Unloader (or Curtis centrifugal unloader on automatic starting outfits), originated by CURTIS, permits starting against full tank pressure. Prevents burning out motors, blowing fuses or jumping belt.
- 3 Safety Cage, originated by Curtis, prevents broken valves dropping into cylinder and wrecking machine.
- 4 Fan Fly Wheel, originated by Curtis, helps cool the cylinder (and the intercooler on two-stage machines). Increases capacity.
- 5 First and only Two-Stage Compressor with a Copper Intercooler, originated by Curtis, assuring fullest advantage of Two-Stage Compression.
- 6 Back of every Curtis outfit is 69 years' successful experience, 26 years of which have been devoted to the design and manufacture of air compressors.

We manufacture a complete line of both single and two-stage air compressors. A style, size and arrangement to meet your particular need. Write at once for full details and prices.

Curtis Pneumatic Machinery Co.
1527 Kienlen Avenue
St. Louis, Mo., U. S. A.

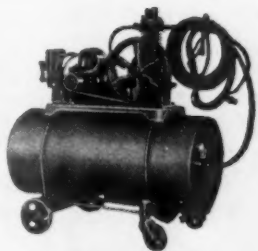
Branch Office: 530-H, Hudson Terminal,
New York City

Canadian Representative: Joseph St. Mars,
Winnipeg and Toronto, Canada.

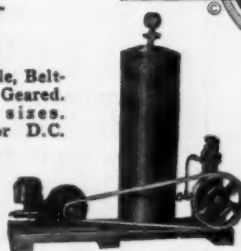
"An Original Design"



Style "S"
Single-
Stage
Outfit
Belted only.
Five sizes, 1/4
to 3 H.P.

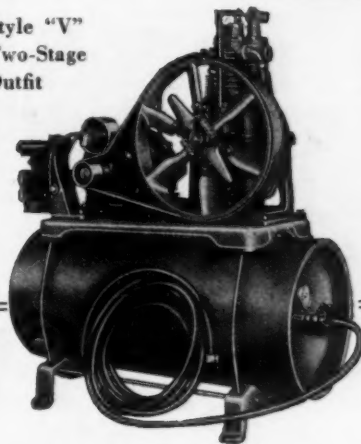


Style "X"
Single-
Stage
Outfit
Portable, Belted or Geared.
Five sizes.
A.C. or D.C.
Motor.



Style "Z"
Single-Stage
Outfit
Belted only. 1/4 to 3
H.P., A.C. or D.C.
motor. Five sizes.

Style "V"
Two-Stage
Outfit



Curtis Two-Stage

In a TWO-STAGE machine the air, which has been heated in compression, is cooled while passing through the intercooler from the low to the high-pressure cylinder, thus permitting the high-pressure cylinder to handle a larger volume of the cooler and denser air. The efficiency of a Two-Stage Compressor depends directly on the degree of intercooling effected.

The degree of heat thrown off by an intercooler depends upon the kind and thickness of the metal and the design of the intercooler tube and radiating flanges.

Copper throws off heat faster than any other commercial metal. 135% faster than cast iron, 112% better than steel and 27% better than aluminum. Curtis intercoolers are made of copper.

Curtis intercoolers are approximately 50% longer and have about 100% more heat radiating fins than others. They are exposed their entire length to the cool blast of the fan fly wheel.



Send
Coupon

Curtis
Pneumatic
Machinery Co.
1527 Kienlen Avenue
St. Louis, Mo.

Gentlemen:
Please send me full details
on Curtis Air Compressors,
your proposition and prices.

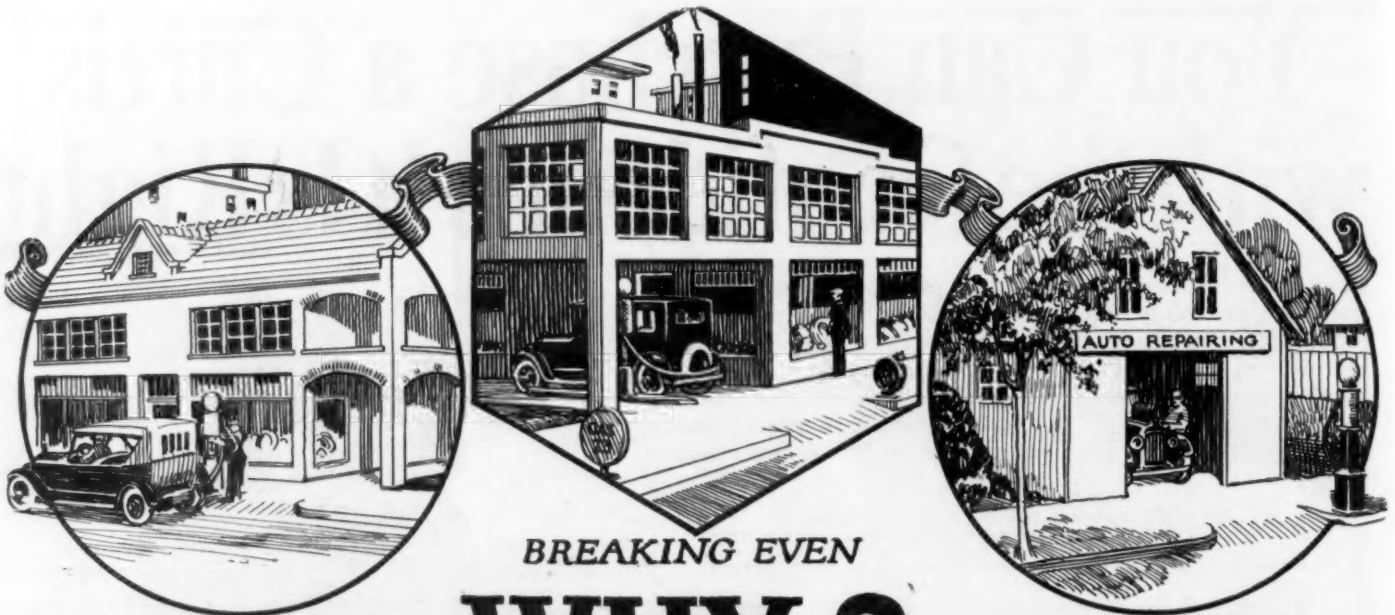
Name

Address

Jobber's Name

Address

CURTIS *Single and*
Two Stage
Air Compressors



MAKING PROFITS

BREAKING EVEN

WHY ?

LOSING MONEY

HERE YOU WILL FIND THE REASONS

MOTOR AGE has set for itself a definite mission. It is a business paper of the automotive trade and concerns itself with the greater success of those in this tremendous field.

Among other important features, **MOTOR AGE** brings to its readers the fundamental reasons for success in the automotive trade. It tells why certain types of automotive merchants are successful and why others are not. It gets down to facts and specific reasons. It doesn't preach—it advises. As an influential factor in the progress of the automotive trade, **MOTOR AGE** has as one of its policies the belief that all of us can profit by the experiences of others. In every issue are found many valuable thoughts that were aroused by some dealer's experience.

Thousands of leading automotive dealers the world over are thus profiting by these weekly messages.

MOTOR AGE
5 SO. WABASH AVE., CHICAGO, ILL.

From Nothing to \$30,000 a Year

This is what Fisk Tires have helped Clyde Alstot of McCook, Nebraska, to do:

"I have been handling Fisk Tires exclusively for the past six years, and have built my business from nothing up to \$30,000.00 a year.

Fisk Red-Tops are my stand-by, and each year brings me new customers through the tires already in use. No other tire has ever delivered the universal satisfaction in this community that the Red-Top does. I sell them to traveling men with coupes and sedans, to merchants for delivery cars and trucks, to lady drivers who don't want tires bothering them on the road, and every buyer comes back for more.

I can truthfully say that the Fisk 30 x 3½ Red-Top is the best fabric tire made, and this is one of the big reasons why I stick to the Fisk line year after year."

Fisk Red-Top Tires never fail. They please the consumer and they increase the dealer's business.

There's a Fisk Tire of extra value for every car, truck or speed wagon.]

THE FISK TIRE COMPANY, Inc.

Chicopee Falls, Mass.

Extra Ply of Fabric—Extra Heavy Tread





KESTER

Acid Core WIRE SOLDER

—and a touch of heat completes any job in half the usual time, whether it's a radiator from a ten-ton truck or just a small terminal on an ignition wire. Kester does either job quickly, economically and permanently.

The reason for these exceptional results? Kester Solder contains tiny pockets which hold an acid flux. Before the solder melts, these pockets, one at a time, release just enough flux to insure a permanent bond.

The modern garage owner supplies all of his mechanics with Kester Acid-Core Wire Solder—either the one pound coils in cartons, or on one, five and ten pound spools—the saving in time and material is truly remarkable.

CHICAGO SOLDER CO.

Direct Factory Representatives

Faucette-Huston Co.
Chattanooga, Tenn.

Louis J. Ziesel Co.
216 Market St.
San Francisco, Calif.



CHICAGO SOLDER
COMPANY

4203 Wrightwood Ave., Chicago, Ill.

Please send me a sample of Kester Acid-Core Solder, no charges, postage prepaid.

Name

Address

Supply House

MA-2-8-23

THE COMMERCIAL VEHICLE

A magazine for the Fleet Owner, furnishing reliable and accurate news, information and advice on how to economically operate fleets of motor vehicles.

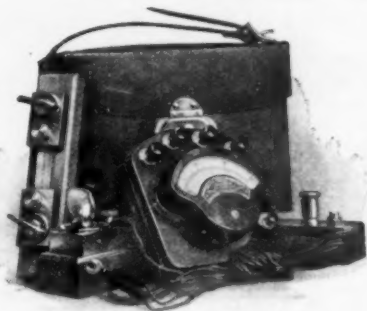
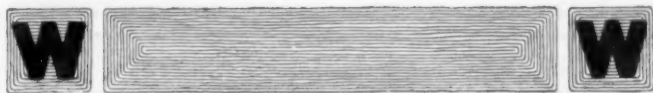
Contains statistics, diagrams and special articles, treating of successful truck operation in all the different trades and industries—Department Stores, Contractors, Shoes, Coal, Wood, Lumber, Dry Goods, Oil Delivery Companies, Bus Lines, Telephone Companies, etc., etc.

Read by leading Fleet Owners throughout the country—men, firms and corporations who own and operate from 5 or 10 up to hundreds of motor vehicles. One subscriber, for instance, owns and operates upwards of 1800 Trucks and maintains 30 Garages and Service Stations. THE COMMERCIAL VEHICLE is the only publication in this particular field and is a real necessity to Traffic Managers, Garage Superintendents and others who look after the care and operation of fleets of motor cars, trucks, busses, etc.

THE COMMERCIAL VEHICLE is published twice a month, on the first and fifteenth. The subscription price is \$2.00 a year (\$2.50 west of the Mississippi). Sample copies will be sent upon request.

THE COMMERCIAL VEHICLE

239 West 39th St.
New York, N. Y.



*Weston
Model 280
Testing Set
for
Garages*

electrical testing

This wonderful instrument should be in every garage and service station. With it, any nature of test known can quickly and dependably be made. No uncertainty—no guessing. Has six ranges. 30 and 3 volts—100 milli-volts—and 300, 30 and 3 amperes. One of these instruments will be a constant asset to your business.

Other Important Instruments

Model 441, "Fault Finder," makes all tests, except starting current. Model 443 Battery Testing Voltmeter gives voltage of individual battery cells and provides for Cadmium test. Model 354, Dashboard Ammeter, is the most dependable and accurate instrument of its kind made.

*Complete Information Gladly
Sent Upon Request*

Weston Electrical Instrument Co.

10 Weston Avenue

Newark, N. J.

Branch Offices in All Principal Cities

WESTON

"THE SUN NEVER
SETS ON THE
WESTON"



"STANDARD" The World Over

**ELECTRICAL
INSTRUMENTS**

*An Indicating
Instrument for
Every Individual
Need and Industrial
Purpose*



Our 100 ft. Packages Mean Clean Stock and Rapid Turnover

Consider the convenience of carrying cable already measured off in lengths found to be the most popular with the average buyer—coils of 100 ft. each.

That's the way Goodrich Cable is sold. And each 100 ft. length is carefully packed in a dust-proof package, plainly marked for identification.

This permits enterprising dealers to carry a complete assortment of all needed types and sizes of cable, involves only a small investment, takes up very little space, makes identification easy and quick and insures clean, fresh looking stock at all times.

Both shop men and car owners like the clean 100 ft. package idea—and this leads to quick and profitable sales.

JOBBERs: We have catalog insert pages, electrotypes, counter literature, sample kits and other sales helps for your use.

THE GOODRICH-LENHART MFG. CO.

HAMBURG

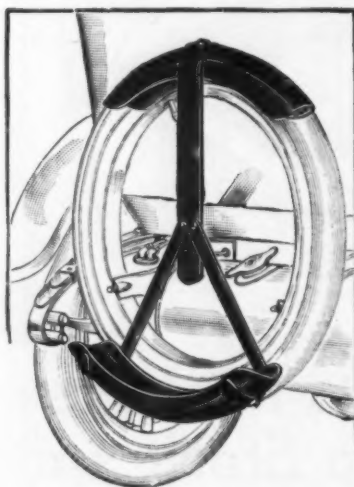


PENNSYLVANIA

Goodrich
AUTOMOTIVE EQUIPMENT
Cable
Starting—Lighting—Ignition
Formerly M.P.

Not Just ONE Profit But → 2-R-3 ←

When you sell a 2-R-3 TIRE CARRIER you not only collect one nice profit but pave the way for 2-R-3 more



Model Y

Simply by showing the 2-R-3 Tire Carrier many car owners may become immediate prospects for a tire, a tube, a rim, and a tire lock; things that they need but did not know how to carry them.

Trouble on the road has convinced most motorists of the necessity of 2-R-3 spares. The motorist who only carries one is skating on the thin ice of the river of trouble, grief, annoyance and delay.

Our attractive and convincing display stand calls the motorist's attention to his need. The simplicity of attaching 2-R-3 Tire Carriers holds an appeal that makes easy sales.

2-R-3 Tire Carriers simply hook on the preceding tire. No tools required to attach. No bolts or nuts to bother with.

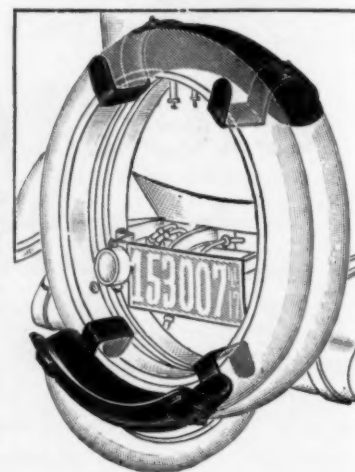
Made in two models, S & Y, for all sizes of tires. Prices range from \$2.50 to \$7.00.

If your jobber cannot supply you, write us direct.

International Stamping Company

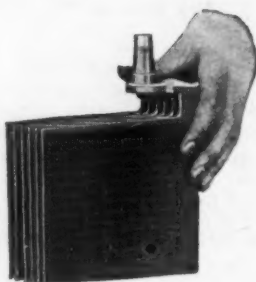
406 N. Leavitt Street

Chicago, Illinois



Model S

WINTER BATTERY PLATES



OUR 90-DAY PLAN

Our 90-day plan enables you to buy plates *as you need them* at quantity prices without loading your shelves with stock. Ask about it.

OPERATE your service station with as few complaints in winter as in summer by using GENERAL *winter* plates. Designed for hard work, they deliver more than enough current to the starter and provide the extra power a cold motor demands.

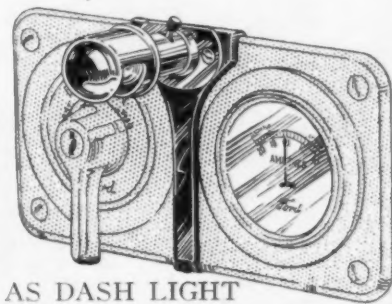
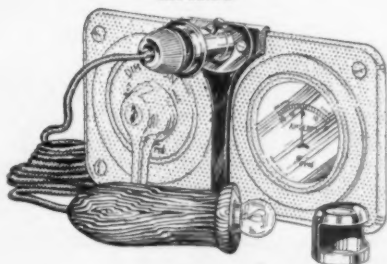
GENERAL plates reduce *winter* battery trouble. That is why they are real business builders. They solve your customer-satisfaction problem during the cold weather.

The cost of GENERAL plates is no higher than ordinary plates. Write us about our 90-day proposition, by which you can buy at quantity prices without a big money investment.

Our folder "A Shop Talk on Battery Plates" gives some interesting tests that may be new to you. It is yours for the asking.

General Storage Battery Co.

2005 Locust Street,
St. Louis, Mo.

AS TROUBLE
LAMP

AS DASH LIGHT

Remember the Name
Clamp-On
Clamp-On
CLAMP-ON
for Fords

Ford Owners Want Clamp-On

Because the First Cost is the Only Cost. *No Extras to Buy*

They want it for its convenience, for its good looks, for its utility, for its low price, and because it is easy to install.

It clamps onto the instrument board between the switch and the ammeter, without boring any holes, or driving a single screw. Five or ten minutes' play installs it.

It lights up the whole front compartment so instruments and pedals can be seen, yet the stamped-brass, nicked shade keeps direct rays from the driver's eyes.

It becomes a portable trouble-lamp by removing the shade and bulb, inserting the attachment plug, and putting the bulb into the handle. The cord is ten feet long; enough to reach any part of the car. Should the 2-cp bulb be insufficient, put in a head-light bulb. All sockets are standard plunger-type.

Priced at \$2.50. **CLAMP-ON** Dash and Trouble Lamps are attractive to the most economical. Yet it pays a mighty good margin of profit, and sells so fast you get yours quickly. Ask us for quotations.

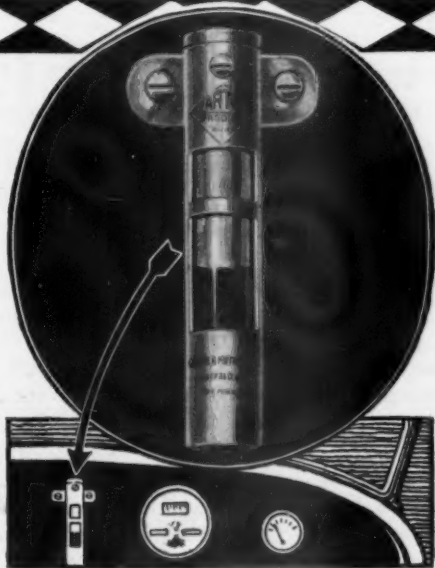
Distributors Wanted

THE BOYD CORPORATION

2660 Washington Avenue

DEPARTMENT W

St. Louis, Mo.



Every Ford Should Have One—

Other cars too. A Carter Oil Gauge pays for itself by stopping the unnecessary buying of oil and by reducing repair bills.

This gauge accurately shows the oil level at all times without the driver leaving his seat. Thousands of Carter Gauges have proven their dependability under all conditions.

Leading jobbers stock Carter Gauges. National advertising is increasing the demand. If your jobber cannot supply you write us.

CARTER MOTOR ACCESSORIES, INC.
388 Pearl St. Buffalo, N. Y.

CARTER
OIL GAUGE

FORD
DODGE
CHEVROLET } *only*
\$3⁷⁵

BUICK
OAKLAND
CHANDLER } *only*
\$5⁰⁰

Norman

flexible PISTON RING



You Can Feel
The Greater Flexibility

Extreme flexibility is gained by the NORMAN exclusive method of graduated peening (deepest opposite the joint). With this elasticity NORMAN FLEXIBLE PISTON RINGS adjust themselves instantly and automatically to the contour of the cylinder walls, insuring a seal against oil and power leakage. The NORMAN joint is another big feature. The ring will open more than $\frac{1}{8}$ " before any leakage can possibly occur.

Every NORMAN FLEXIBLE PISTON RING is single cast, heat treated, oil tempered and pressure peened. They are easy to install, seat quickly and give highly efficient service over a long period. It will pay you to use them. Prices—2 $\frac{1}{2}$ " up to and including 4", 60c—over 4" up to and including 5", 80c.

Write for sample ring and complete information.

NORMAN MFG. CO.
Davenport, Iowa

ACCURATELY
MACHINED

SEMI-STEEL
REPLACEMENT PISTONS

ACCURATELY
MACHINED



For replacement work after a rebore or re-grind job insures your customer as good if not a better job than the original assembly.

Dall Pistons are simply GOOD Pistons, made to manufacturer's specifications, sometimes more refined in design and lighter in weight, but always as carefully made and inspected as though they had to pass the most rigid inspection of a Motor Manufacturer.

Dall Pistons are regularly furnished in standard and various oversizes, also semi-finished 1/16 oversize.

Write today for price list and delivery schedule on all items. Distributors at various points will take care of your requirements.

THE DALL MOTOR PARTS COMPANY

Post Office Station D, Cleveland, Ohio

Southwestern Branch

THE CARROLL CO.

2218 S. Harwood St., Dallas, Texas

Distributors Everywhere

From Maine to California,
distributors' stocks of
AMERICAN Springs guarantee
quick delivery to you

Write for name of
distributor nearest you
AMERICAN AUTOPARTS COMPANY

3775 French Road
Detroit, Mich.

AMERICAN Springs

ANY CAR ANY MODEL ANY YEAR
DISTRIBUTORS EVERYWHERE WRITE FOR CATALOG

HARRIS

TRADE MARK—REG. U.S. PAT. OFF.

OILS AND GREASES

In a class by themselves

Lubrication is without question one of the most vital factors in automobile maintenance. One sure way to gain the good will and confidence of your customers is to advise them to use Harris Oils. After they have used Harris Oils a short while, they will wonder why you didn't tell them sooner. For when it comes to a question of perfect lubrication, Harris Oils are in a class by themselves.



"America's Leading
Lubricants"

Copyright AWHOCO 1921

A. W. Harris Oil Co.
Providence, R. I. Chicago, Ill.

Dealers—Write for sales plan.

Model 300 Steel Open Express Body

*for—Ice Men
Creameries
Ice Cream Dealers
and General Express Purposes*

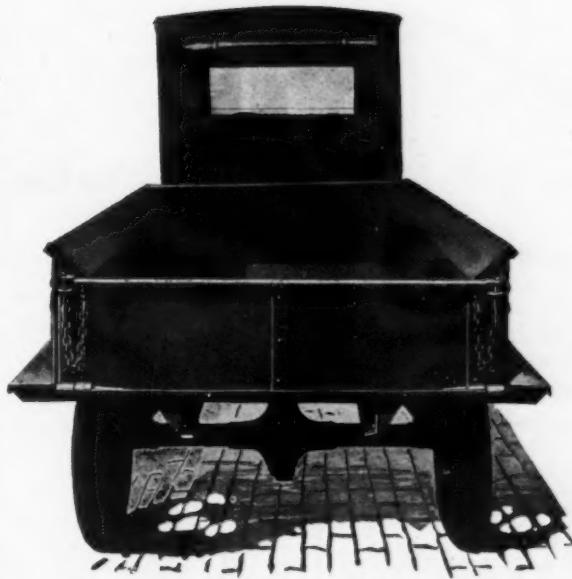
THIS sturdy and dependable body is built of No. 10 gauge steel—the bottom is strongly reinforced by seven heavy angle irons welded transversely across the bottom—it is built to last a life-time.

It is equipped with an all-steel drop end-gate and heavy duty fenders.

There is a Galion Body to meet every requirement—and all makes of trucks.

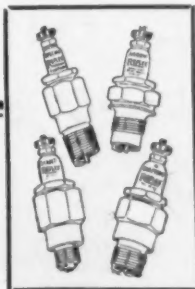
Write Today for Prices

The Galion Allsteel Body Co.
GALION, OHIO



Dimensions—Width, 45". Length, 96".
Side Panels, 16" & Up. Side Flares, 5".

THE ONLY
PRACTICAL
WAY TO
SELL



RECOMMEND
A SPECIFIC
TYPE FOR
EVERY
MOTOR
CONDITION

SPARK PLUGS

In recommending the proper spark plug, it is just as essential to know the motor condition as the make of car.

A Specific Type of Reflex Spark Plug is made for each motor condition.

A chart of spark plug recommendations is furnished dealers, indicating the correct size and type of plug for each motor, according to whether it is a NORMAL MOTOR, HOT MOTOR LIGHT DUTY, HOT MOTOR HEAVY DUTY, or an OIL PUMPER.

JUST THE
THING



FOR OIL
PUMPERS

The enclosed end prevents creepage of oil into plug chamber.

The ball-tipped porcelain construction of the core holds the heat at tip preventing fouling.

Write for details.

THE REFLEX IGNITION COMPANY
3060 W. 106TH ST. CLEVELAND, OHIO
Since 1909—Spark Plug Makers Supreme

Normal Motor

Hot Motor
Light Duty

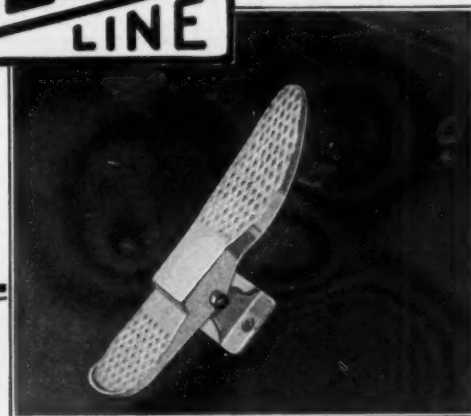
Hot Motor
Heavy Duty

Oil Pumper



**THE
GREEN
LINE**

\$2.00



Accelerator Pad & Foot Rest

enables the driver to drive for long periods without getting the familiar cramp so commonly experienced from using the conventional type of accelerator.

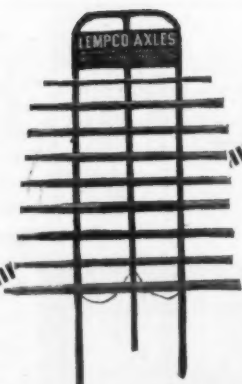
The GREEN Accelerator Pad is so designed to enable the foot to come down solidly and stay without any effort on the driver's part. It enables the driver to feed the motor gas evenly, regardless of how rough the road is.

It is cast of aluminum, highly polished, and adjustable to various positions.

Your jobber has it. Ask him now for a dozen.

Green Manufacturing Co.
1072 First St., Milwaukee, Wis.

**STEEL
DISPLAY
RACK
FREE**



Quick Sales—Generous Profits

Lemeco high quality Axles of open hearth steel, when exhibited on the handsome free display rack, are bringing dealers a big and profitable replacement business. Their fine appearance, unconditional guarantee and low prices make them quick and easy sellers.

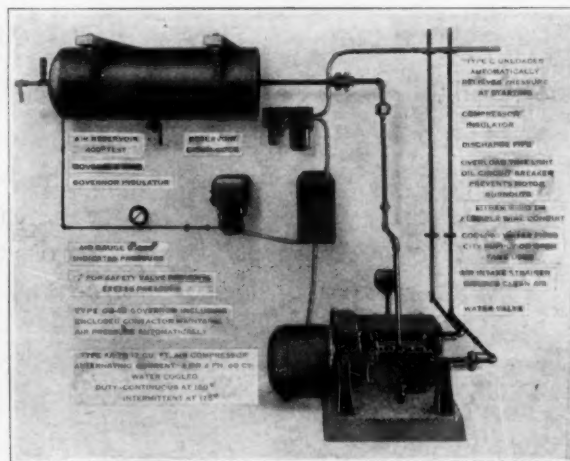
Ask for name of nearest distributor, who will supply you with display rack without cost to you.

LAKE ERIE METAL PRODUCTS CO.
4001 W. 25th St., Cleveland, Ohio

LEMPCO AXLES

Air Compressor Units

Suitable for Giant Pneumatic Truck Tires, Air Tools, and General Garage Purposes.



Write for Complete Information

ALLIS-CHALMERS

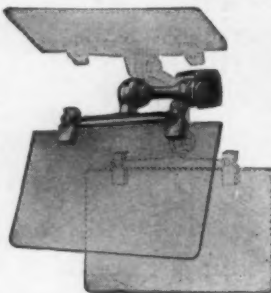
MILWAUKEE, WIS. U. S. A.

The Optoshield

TRADE MARK

Converts Glare to Daylight

Relieves the driver's eyes of all strain from oncoming headlights, sun glare, road glare and snow glare. A development of optical science which completely solves the glare problem. Made of beautiful sapphire-blue Belgian optical glass, mounted in a nicked bracket. Does not obstruct vision in the least. Driver sees right through it. Fits all passenger cars—installed instantly. Two models for open and closed cars. Price: \$3.50 complete. Order through your jobber—write to us for descriptive literature. Distributors wanted.



Optoshield attached. Note adjustability

Detroit Sales Service Co.
1647 Penobscot Bldg., Detroit
Sales Division, Grand Haven Brass Foundry



CRANE PULLER

Gets 'Em All



The most stubborn wheel lets go when the Crane Puller is used. No fear of breakage—the Crane design and Crane materials make these pulling tools more than equal to their job.

Arms drop forged from high carbon steel, screw case-hardened with inserted tool steel point.

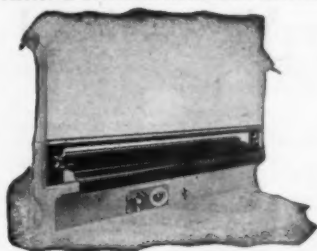
Three models, including the new universal Two-arm, Three-arm Crowfoot model, 4 sizes of each. Real tools for busy mechanics.

Our 24-page folder gives you the whole wheel-puller story. Write for it.

CRANE PULLER CO.

Arlington

Mass.



Perfect Ventilation

Reduces discomforts of hot weather driving

The Phillips "Keep Kool" Ventilator is new—something to make the driver more comfortable and keep him in a happy mood. Ford owners will be glad to know about it. Show it to them.

7 REAL ADVANTAGES

1. Gives more ventilation than a tilted windshield or any other ventilator on the market.
2. Directs cool air on the feet of the driver.
3. Absolutely rain tight when closed—protects the coil box.
4. Made to fit standard Ford windshield frame.
5. Adjusted in an instant—no screws to make tight or loose.
6. Can be locked in any position and does not rattle.
7. Adds to appearance of the car and very easily installed.

Jobbers and Dealers. This is a thoroughly tested article—guaranteed. Sells readily and at a good profit. Distributors Wanted! Write for your territory now!

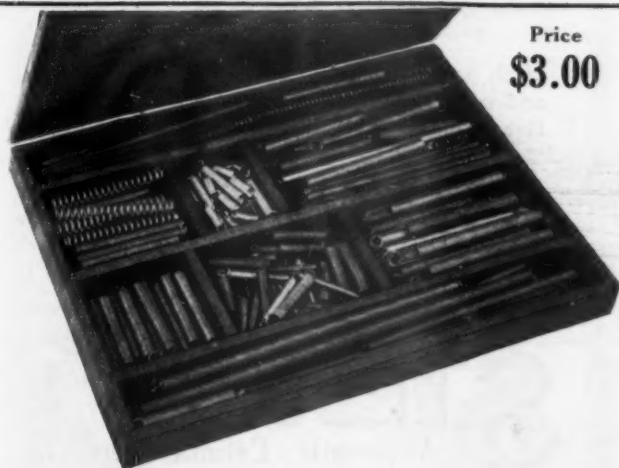
F. C. PHILLIPS CO., Stoughton, Mass.
Manufacturers Screw Machine Products.



Not a Specialty

A Necessity

Springs For All Purposes



Price
\$3.00

Peck's Assortment of coil springs contains about everything needed in the busy Garage, Service Station and Repair Shop in the shape of springs.

It is also a ready seller over the Accessory counter. The car owner finds it to be just what he wants and needs. Always ready—no stopping to

make—no waiting—just reach into the box and pick out what you want.

Peck's Assortment of Coil Springs comes to you in a well built wooden box, partitioned off into convenient spaces. Handy, efficient, good. Order your box today.

Jobbers—write us for prices and discounts.

THE PECK SPRING CO.

PLAINVILLE,

CONN.

Even freezing will not burst it!

The brass honeycomb core of the Atlas Radiator is flexible—it expands as the water freezes which eliminates the danger of bursting.

Furthermore the Atlas is better protected against over-heating in summer.

Its flattened tube construction gives it three times the water capacity of the tubular type and these tubes have four times the cooling surface.

A more efficient Radiator—it is also a stronger one.

In its patented construction a heavy steel bar runs across the rear face and this bar is formed integral with the bracket supports and radiator sides.

Whatever happens the Atlas keeps its true shape.

Made for all Fords and beautifully finished—the Atlas offers a big dealer opportunity. The discounts are right. Write today.



Steidle Mfg. Co.
Cincinnati Ohio

FOR FORDS **ATLAS**
RADIATORS

"The Radiator with a Backbone"

The Ultimate Way WET INTERNAL GRINDING

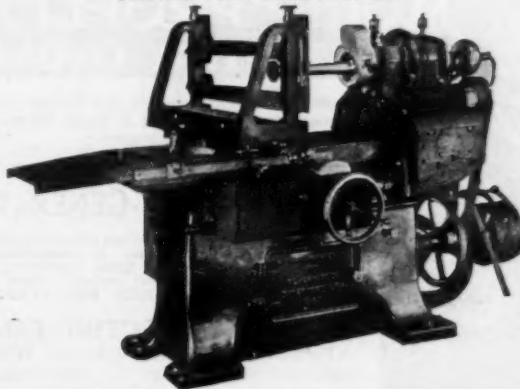
Wet grinding, as made possible by the Micro Internal Grinder, is as far in advance of ordinary dry grinding as the present day automobile is over the old ox team.



The Micro is a highly developed type of internal grinder adaptable for either wet or dry grinding, at the option of the operator, permitting highest quality of results. Its automatic action, both as to cut, feed and table travel provides the most accurate work humanly possible in exceptionally quick time.

If you're going to get a grinder, get the kind that will pay you biggest returns. Our bulletin gives full information—send for it.

MICRO MACHINE COMPANY, Bettendorf, Iowa
Successor to B. L. Schmidt Co.





E. Z. 2 Sell—2!

An improved Magneto Plug for the Ford. Makes cleaning easier and quicker. The flange screws permanently on to transmission, using old screw holes. The Plug screws into flange like a spark plug. No oil leaks. Guaranteed. A great dealer proposition. Sells fast and the discounts are big. Get busy. Distributors and Dealers, write for details.

List Price, \$1.00.
The Hazle Specialty Co.,
Hazleton, Penna.

E-Z-2-KLEEN

FORD MAGNETO PLUG

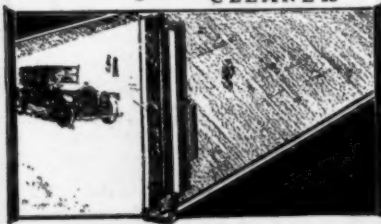
Always a Clear View Ahead

The Giffy

BOTH sides of windshield are cleaned and dried with one sweep across.

Offers an unobscured view of the road when most needed. Particularly valuable for driving at night in stormy weather.

WINDSHIELD
CLEANER

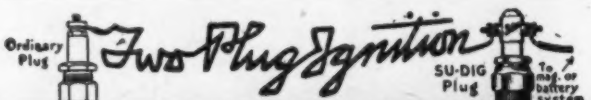


Attractive — sturdy — efficient. Positively will not rattle. Made of aluminum and rubber. Quickly installed. Fits all two-piece windshields.

Dealers: Send for attractive counter and window display. Get the details of our attractive trade offer.

THE LA VIETES
MFG. CO.

Station A
NEW HAVEN, CONN.



MORE POWER
GREATER MILEAGE

Do You Understand Two-Plug Ignition—

the system that ignites the gas at two opposed points at once? This burns the mixture completely and almost instantly; increases power and gasoline mileage; saves fuel and lessens carbon accumulation and spark manipulation. SU-DIG Series Spark Plugs added to the plugs now in your engine give Two Plug Ignition.

A Wonderful Improvement in the running of your car. No change in present equipment required. Write for free booklet, "How to get More Power." Please mention car.

Superior Motor Power Co., 75A Spring St., New York



Let Crooks Worry

The owner needn't. His steering wheel is held straight ahead. The car can be moved by firemen, but a crook couldn't take it around the next corner. That's complete protection.

Attached to steering post in five minutes

SAFE-T-LOCK

For Steering Wheels

(Price \$10.00)

All parts made of case hardened steel which cannot be sawed, filed or chiseled. No keys. Combination works by touch in dark. Simple, unforgettable, unduplicated. In handiest position for driver. Good profits in selling all Safe-T-Locks. Get the full line. Write for complete literature.

Chas. R. Morse Mfg. Co.

24 N. Ada St., Chicago, Ill.

Sales Representatives

Davis-Palmer Co.

4750 Sheridan Rd., Chicago

Make Your "FREE AIR" Service A Profitable Investment—



Model 21

Install the Model 21 Garage Compressor Unit —fast becoming the most popular "free air" dispenser on the market. It has no intricate parts to get out of order and it lasts longer—in good condition. The profits from the extra gasoline, oil and accessories sold will more than compensate you on your investment.

Write for our interesting trade proposition.

Machine Shop Equipment Co., Grove City, Pa.

AUTOMOBILE BUMPER SALESMAN

High pressure man with strong following and successful record in selling bumpers. Good position, splendid opportunities. Tell us fully of yourself and your experience.

Address Box E-6046 Care of Motor Age
5 S. Wabash Ave., Chicago, Ill.



MORE PROFITS IN BATTERY CHARGING

Low maintenance cost in the Valley Motor-Generator Set makes it a profit earner for service stations and garages.

The VALLEY MOTOR-GENERATOR

provides vigorous and ample direct current for charging from an alternating house line. A mechanically perfect unit of ball-bearing motor, generator, field rheostat, ammeter, fuse and switch. Three sizes, 2-G, 5-G and 30-G. WRITE FOR PAMPHLET.

VALLEY ELECTRIC CO.,

(Formerly the St. Louis Electrical Works)

3155 So. Kingshighway St. Louis, Mo.



STORM

Automatic Cylinder Finishing Machines

Are speedy and accurate, self-centering and automatic. Produce a "gun-barrel" finish for close piston fitting. Ideal for grinding or honing after reaming or boring, or for refinishing alone where wear is slight.

STORM SELF-CENTERING FINISHING HEADS may be used with electric drill or drill press.

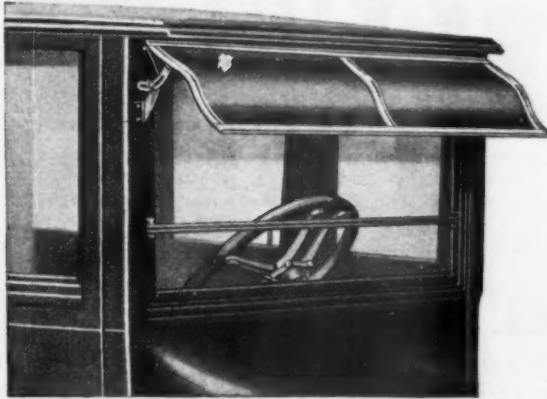
Write for new book on Modern Cylinder Methods.

STORM MFG. CO. Dept. A
400 Sixth Ave., So. Minneapolis



PREMIER

WINDSHIELD VIZOR
"Triple-Curve"



The original, exclusive "triple-curve" construction of the G-G-H Premier means

1. **Strength**—A guarantee against warping, wrinkling or sagging. Although the G-G-H Premier weighs only 4½ pounds, it will last the life of your car.
2. **Beauty**—The G-G-H Premier enhances the appearance of any car. The strong reinforced aluminum frame with genuine DuPont Pyralin panes adds beauty to the finest car. Brackets are black-enamelled with nickel trim.
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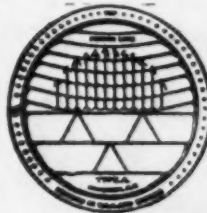
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Benzer Windeflectors..... 14.00



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Benzer Lens throws a clear, glareless light without tilting the lens. It is legal and approved everywhere. A big margin of profit and quick turnover. Stock them today and get in on this.

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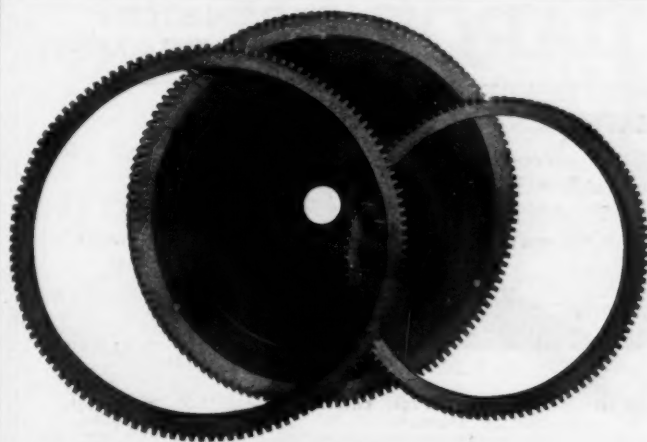
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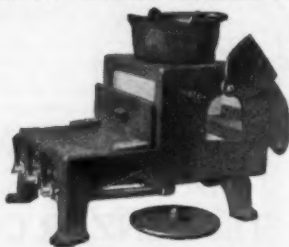
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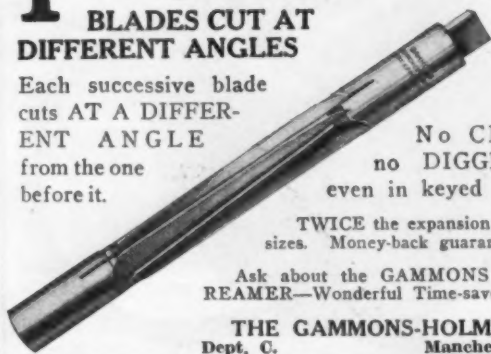
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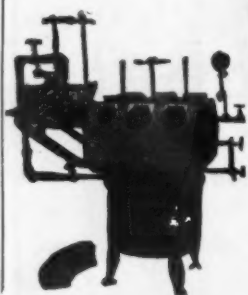


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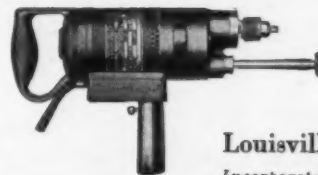
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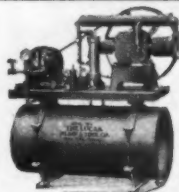
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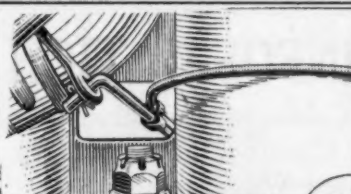
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Less Oil and Gas—from WEL-EVER equipped units. Its oil control feature is guaranteed to stop oil pumping, prevent spark plug fouling and reduce carbon formation.

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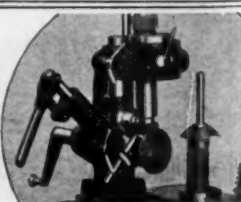
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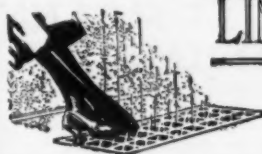
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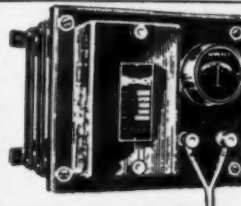
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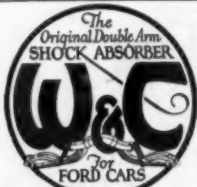
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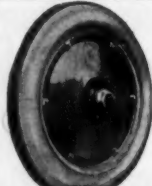
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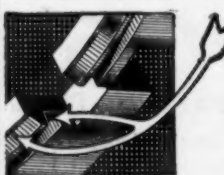
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Forced Lubrication Prevents Foul Plugs. The beveled top edge and central groove keeps oil from the combustion chamber—reduces carbon. Dealers—Write for the details.
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OVER 50 WONDERFUL SHORT CUTS IN NEW CATALOG T-105
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A ring for every purpose—Spiral Cut, Oilless and StepSet—and a complete line of semi-steel Replacement Pistons and high-grade Piston Pins. Write for details.

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Unequalled in its Performance

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Is a process developed to provide dry, unified, clean-burning gas. The instrument that does this can be attached to any carburetor in a short time at moderate cost. Both dealer and jobber make good profit.

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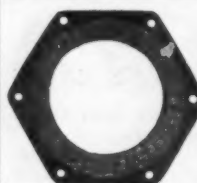
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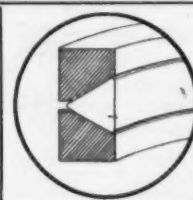
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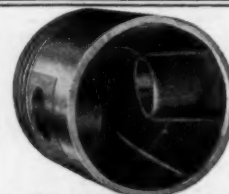
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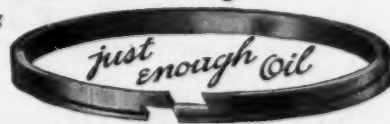
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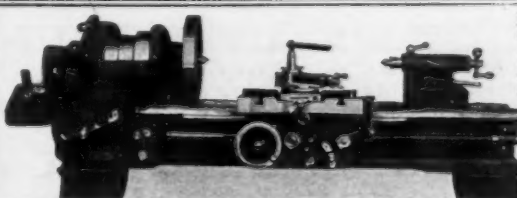


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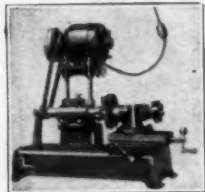
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